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SURVEY OF THE NETHERLANDS

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Netherlands

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SECTION III

POPULATION AND SOCIAL CONDITIONS

15. General

a. Development of the modern Netherlands

That area which today is geographically called the Low Countries, comprising the Kingdoms of the Netherlands and Belgium, began its evolution from feudal provinces to a national state under the leadership of French Burgundian dukes in the latter half of the fourteenth century. The petty provinces in this region had already gained for themselves many privileges and liberties when the dukes from the French duchy of Burgundy brought to them a semblance of unity. The process of uniting the provinces developed rapidly under Philip the Good (1419-1467). Unity and centralization brought prosperity. Holland and Zeeland became centers of wealth. The defeat of the Hanse Towns in 1438 by the province of Holland made the Hollanders the chief carriers of Eastland traffic. The Low Countries further achieved economic importance by securing the domination of the vital herring fisheries and by the rise of Antwerp as the chief continental seaport. The splendor of the Burgundian court rivaled anything the courts of Europe could boast.

When the rule was left to Mary of Burgundy (1477-1482), the duchy of Burgundy reverted to the French crown while Mary held only the provinces of the Low Country under her control. Through a series of important marriage alliances the provinces came under the control of the German (Austrian) and Spanish Hapsburgs successively. The Spanish and Austrian Hapsburg domains were eventually united in the person of Charles who was born in the Netherlands in 1500. Absorption of the provinces into the Hapsburg domains had brought the loss of many liberties; but while Charles (who was Charles II of Spain and Charles V of the Holy Roman Empire) remained in control, his Dutch subjects tolerated these encroachments upon their liberties.

The provinces of the Low Countries did not show the same measure of respect for Philip II, the son of Charles. His fanatical zeal in stamping out Protestantism and his crushing policy of taxation fomented a rebellion which turned into an eighty-years' war for liberation (1568-1648). No period of Dutch history is more glorious than the Eighty-Years' War. No period of its history is more productive of nationalistic lore and legend. Under the leadership of William, Prince of Orange, the struggle was carried on against hopeless odds. William of Orange had to cope not only with the greatest military and naval power in the world but also with disunity at home, chiefly on the score of religion. William of Orange gave his life in the attempt to maintain a national resistance against overwhelming Spanish power. The successful diplomacy of Alexander Farnese and his skill as a general enabled him to win the southern Walloon provinces back to the Spanish crown, but the seven northern provinces continued the unequal struggle. Alleviation came from the entrance of England into the conflict and from the fact that the attention of Spain became diverted by her interest in general European developments. A truce was arranged between the seven provinces and Spain (1609-1621).

During this first period of the Revolt of the Netherlands, there was a tremendous upsurge in commercial enterprise in the northern provinces. Since the southern provinces had suffered severely from Spanish repression and from the ravages of war, Amsterdam, in the north, replaced Antwerp, in the south, as the emporium of Western Europe. This period also marked the beginning of the exploitation of the East Indies through the activity of the Dutch East India Company. As war measures, Dutch ships preyed upon Spanish and Portuguese shipping; and many of the valuable islands of the East and West Indies fell into the hands of the Dutch. The twelve years of truce gave the provinces

an opportunity to organize their gains and expand their control over their valuable, newly acquired colonial empire.

The government which evolved from the struggle was a republic of seven sovereign states, i.e., Gelderland, Holland, Zeeland, Utrecht, Friesland, Overijssel and Groningen, bound into an extremely loose confederation known as the Dutch Republic. Leadership was actually, although not theoretically, in the hands of a Stadholder selected by the individual provinces.

Hostilities between Spain and the Dutch Republic were resumed in 1621 both as an independent struggle and as a phase of the highly complicated Thirty Years' War (1618-1648). The Peace of Westphalia (1648) which concluded the general European struggle, recognized the independence of the Dutch Republic as well as its colonial conquests in the East Indies and in Brazil.

During the latter part of the seventeenth century, the Dutch Republic entered upon a series of commercial and political wars with England, Portugal, and France. The first English war, 1652-1654, a commercial war, was settled entirely in favor of England. As a result of the Portuguese War of 1657-1661 the Dutch added to their conquests in the Indian Ocean and South Pacific. The Dutch lost their hold on their North American colony in the second Anglo-Dutch War (1664-1667). France also stepped into the picture of Anglo-Dutch rivalry when she incited England to a third war against the Dutch Republic (1672-1674). This war became particularly disastrous to the Republic when the armies of Louis XIV overran southern Netherlands. In desperation the Dutch again turned to the House of Orange, now represented by Stadholder William III (1672-1688). Once again the House of Orange saved the country from complete ruin.

The rivalry between England and the Dutch Republic ended when Stadholder William III, who, by his marriage to an English princess had a vague claim to the English throne, was

called to rule England after the Glorious Revolution of 1688. For the Dutch Republic this meant that it was taken in tow by England in all of the continental wars against Louis XIV. These wars were unprofitable to the Dutch; for the Treaty of Utrecht (1713), which ended these wars, gave the Dutch no new gains. By this treaty the old Spanish Netherlands (Belgium) became the Austrian Netherlands.

The period following the Treaty of Utrecht was a period of decadence for the Netherlands. Decentralization set in and the leadership of the stadholderate became increasingly ineffective. The Dutch Republic, in tow of England, faced the Succession Wars of the continent poorly prepared and without leadership. The War of the Austrian Succession proved to be particularly disastrous for the Republic; and once again leadership was concentrated upon the House of Orange, under Stadholder William IV.

After the death of William IV, an anti-English sentiment swept the Republic. His heir married the German Princess Wilhelmina. During the American Revolution the Dutch Republic was very sympathetic to the American cause.

With the advent of the French Revolution, the Dutch Republic, wearying of the leadership of the House of Orange which spasmodically became weak and ineffective, entered into an agreement with the French Revolutionists. Consequently, the Dutch Republic was replaced by the Batavian Republic, established under dictation from Paris. Napoleon, in turn, converted it into a dependent kingdom under his brother, Louis. The Napoleonic regime was overthrown by a popular revolution; and, with English aid in 1814, a member of the House of Orange was recalled and given the title, William I, Sovereign Prince of the Netherlands. In the general settlement following Napoleon's downfall, the Kingdom of the Netherlands was recognized; and her territory was enlarged by the addition of present day Belgium, so as to form a buffer state

against France. Luxembourg was made a duchy under the male members of the House of Orange.

All attempts to incorporate the area of Belgium into the kingdom in an amicable manner failed. These newly acquired southern provinces were never completely satisfied. In 1830 the southern provinces, led by the Walloon sections, revolted, and by the intervention of European powers this area was recognized as the independent kingdom of Belgium (1839).

Subsequent to 1839, the history of the Netherlands was characterized by frequent constitutional reforms toward greater democratization and by concern with domestic issues. The Kingdom assiduously avoided all foreign entanglements.

In 1898 Queen Wilhelmina officially assumed sovereignty, and the dynastic connection with Luxembourg ended. Her long and very able reign has been characterized by greater democratization of government and the solution of the educational controversy whereby both public and sectarian schools were given state support. The Kingdom of the Netherlands was able to maintain its neutrality during the World War but at an enormous expense. The army of 450,000 men was constantly kept at war footing and the allied blockade worked havoc with the vital Dutch international commerce.

The Kingdom of the Netherlands was not particularly popular with the allied nations following the war. Her neutrality and her protection of ex-emperor Wilhelm were not well received. Furthermore, Belgium began to make demands on the Kingdom of the Netherlands for territory vital to Belgian defense. Particularly the estuary of the Scheldo and the province of Limburg were claimed by Belgium. Queen Wilhelmina very astutely dealt with these foreign problems, while at home measures were taken to rebuild the economic structure which had been severely shaken by the World War and the depression of the thirties. The

Kingdom of the Netherlands had regained her economic status, and, through her activities in the League of Nations, she had regained her prestige abroad by the time of the German invasion of May, 1940.

b. Contemporary Social Scene

The population of the Netherlands is about 9,000,000, and is increasing at the rate of 100,000 a year. The density of population is very high, - nearly 700 per square mile.

The Dutch are a Germanic people. The population is racially very homogeneous. The large number of French Huguenots who came to the Netherlands as refugees two and a half centuries ago have long since been assimilated. In recent years the Germans have constituted, by far, the largest group of aliens. Other alien groups are negligible. Class lines in the Netherlands have become rather fluid, owing to a number of factors which have been breaking down the rigid lines of an old society.

The language of the country is Dutch, or Holland, - a German language in some respects resembling English. The Dutch are extremely proficient in the major languages of Europe. English is spoken by the middle and upper classes. Interpreters are needed only in the rural districts.

The Dutch are a sober, steady, law-abiding people. They have demonstrated their political ability by centuries of self-government and by the steady development of a political and social democracy. With few exceptions, the Dutch are very favorably inclined toward the United States and the United Nations.

The standard of living before the war was fairly high. The Dutch had developed a rather comprehensive system of social security.

Dutch workers were highly effective. The larger Dutch industries were marvels of technological efficiency. Holland had a fairly wide variety of skilled laborers.

There was practically no illiteracy in Holland. The percentage of the population completing high school was not as large as in the United States, and the number completing college and professional courses even smaller. However, judged by European standards, the professional schools graduated large numbers of persons with superior training.

A rather strongly religious atmosphere pervades the country. Among Protestants there was a remarkable revival of Calvinism during the past 75 years, and during these same years the Catholics made rapid social political progress. Religious issues, such as the subsidization of religious schools and diplomatic relations with the papacy, played a leading role in Dutch politics. Religious resistance to Nazi ideology is a very important factor in the present situation.

The Dutch are normally a law-abiding people, though quite clearly the Dutch have little respect for Nazi law and order. The Netherlands police system was a highly centralized and effective organization.

Dutchmen were organized into numerous groups, and every group had its organ. As a result there were a very large number of periodicals. There were no dailies with large circulations, since even in this field the secular press had to compete with rivals published by religious groups. Propaganda, to be effective, should emphasize the historic background of the Netherlands, the ties connecting the Dutch with the House of the Orange, the common ideology of the Dutch and British and Americans, and the Nazi threat to religious and civic liberty.

16. Population

a. Total Population

An official estimate gives the population of the Netherlands as 8,829,408 in 1939. Since the population during the previous decade had been increasing at the rate of about 100,000 a year, the present population must be something like 9,000,000. The average population density is extremely high - nearly 700 per square mile. There is a heavy concentration of population in the area marked off by the four large cities of Amsterdam, The Hague, Rotterdam and Utrecht. The two provinces of North and South Holland contain the three largest cities; Amsterdam, Rotterdam and The Hague, and a number of cities of second rank, such as Haarlem and Leiden. About one-half of the population of the country lives in towns of more than 20,000. The density per square mile in the various provinces in 1939 was as follows: South Holland, 1892; North Holland, 1460; Utrecht, 898; Limburg, 712; North Brabant, 531; Gelderland, 471; Groningen, 471; Overyssel, 438; Zeeland, 369; Friesland, 327; and Drenthe, 238. For the area and population of the provinces see Appendix I ,Table I.

b. Birth and death rate

The annual birth rate is about 20 per thousand; the death rate in 1939 was less than 9 per thousand - the lowest of any country in the world.

c. Chief cities

The population of the larger cities at the end of 1939 was as follows: Amsterdam, 800,594; Rotterdam, 619,686; The Hague, 504,264; Utrecht, 165,028; Haarlem, 140,469; Groningen, 121,632; Eindhoven, 113,128; Tilburg, 97,338; Nijmegen, 95,130; Enschede, 91494; and Arnhem, 90,495. For a list of cities with a population of more than 20,000 see Appendix I, Table II.

ON

FREE

POPULATION DENSITY OF THE NETHERLANDS

LESS THAN 130 PERSONS PER SQ. MI.

130 - 260 PERSONS PER SQ. MI.

260 - 520 PERSONS PER SQ. MI.

520 - 1040 PERSONS PER SQ. MI.

OVER 1040 PERSONS PER SQ. MI.

North Sea

IJssel Meer

Groningen

Zwolle

Amsterdam

The Hague

Utrecht

Rotterdam

Nijmegen

Germany

Eindhoven

Belgium

Maastricht

10 25 50

MILES

4 5 6 7

53 52 51

E 25, 1942

DRAWN IN GEOGRAPHY DIVISION, O.S.S.

PROVISIONAL EDITION

FREE

POPULATION DENSITY OF THE NETHERLANDS

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Utrecht

Rotterdam

Nijmegen

Germany

Eindhoven

Belgium

Maastricht

0 10 25 50

MILES

4 5 6 7

53 52 51

MAP NO. 604, JUNE 25, 1942

DRAWN IN GEOGRAPHY DIVISION, O.S.S.

d. Composition: Age and Sex

The age and sex distribution of the population in 1938 was as follows:

	Male	Female
Under 5 years	422,922	402,584
5-9 years	422,959	404,562
10-14 years	415,679	401,849
15-19 years	416,449	402,531
20-29 years	723,066	722,925
30-39 years	627,343	652,723
40-44 years	265,468	276,539
45-49 years	230,936	240,212
50-54 years	207,308	213,518
55-59 years	179,711	186,262
60-64 years	154,792	160,566
65-69 years	116,408	123,580
70-74 years	85,034	91,737
75-79 years	51,280	56,188
80-89 years	31,663	37,332
90-99 years	1,834	2,548

17. Ethnic and Social Groups

a. Racial origin and admixtures

The Dutch are a Germanic people. There has been some admixture of other peoples in the past but not much in the last two centuries and a half. A number of Portuguese Jews came to the Netherlands at the end of the 16th century and some German Jews in the beginning of the 17th century. The Jewish population in 1930 was 11,917 or 1.4 per cent of the total population. There was a considerable influx of French Huguenots at the end of the 17th century, and many French family names are still found in the Netherlands. An important commercial country, situated at the crossroads of Europe, Holland naturally attracted some foreigners to its shores. During the last few decades, a few thousand Eurasians from the East Indies have come to live in Holland and in the past few years, a few Negroes from Surinam and the West Indies. The Dutch are remarkably free from racial feeling. There are no racial discriminations. The anti-Semitic decrees of the German occupation authorities have caused much resentment and have been met with bitter opposition.

b. Alien groups

There were the following alien groups in the country in 1930 (the most recent figures available): Germans, 101,955; Belgians, 25,404; English, 2,511; and French, 2,053. After Hitler's rise to power in Germany, the number of Germans, both Nazis and anti-Nazi refugees, greatly increased.

c. Relative importance of social groups

Owing to the fact that the title decends to all the children, the nobility is rather numerous. However, the Dutch Government no longer creates new nobility and has not done so for decades. The most common titles are: Graaf (count), Baron (baron), and Jonkheer (no English equivalent). The Dutch are a strongly democratic and individualistic people and rarely, except on formal occasions, refer to members of the nobility by their title. No legal or political privileges

attach to the nobility (with the exception, of course, of the members of the ruling family). However, members of the nobility have been strong in certain services. With two or three exceptions, every Minister of Foreign Affairs since 1815 has been a member of the nobility, and a great majority of the officials in the Foreign Office and the Foreign Service have titles of nobility. Likewise most of the commissioners of the provinces have been members of the nobility.

18. Language

The language of the Netherlands is called Holland or Dutch. The people of the various provinces each spoke, and in common parlance still speak, separate dialects. In the Province of Friesland the inhabitants speak a language which is more nearly akin to English than to Dutch. In course of time the dialect of the province of Holland, the seat of the capital and the important commercial city of Amsterdam, became the official language of the country. For this reason the Dutch language is often called Holland. Foreign languages, i.e. German, French and English, and especially the latter, are emphasized in the schools. Every Dutchman with a high school education speaks English fluently. Many others, engaged in shipping and commerce, likewise speak English fluently. It has been said that as linguists the Dutch "hold the first place in Europe, in the sense that a larger proportion of them than of any other nation read, speak, and write foreign languages." Except in the rural districts no interpreters are necessary.

19. Characteristics of the People.

a. Influence of tradition and custom.

Tradition and custom exert a fairly strong influence in Dutch society. It is an old society, and religion plays a large role in it. Yet Dutch conservatism has been subject to many modifying influences. Geographically situated between Germany, France and England, Holland became the meeting point of many and diverse intellectual currents. Its large commercial and shipping interests and its vast colonial empire brought it into contact with many peoples. All this has had an influence on Dutch society and thinking, so that in many respects it has become quite fluid.

b. Temperament.

The Dutch are regarded as rather phlegmatic and cautious.

c. Military qualities.

Except for wars against tribes in the East Indies, the Dutch had not engaged in a war since the brief campaign against the Belgians over a century ago; and the Dutch themselves thought they had become soft. The Government had allowed its military establishment to run down. Yet the Dutch have proved in the present war that they possess high military qualities.

d. Respect for authority.

The Dutch are a law-abiding people. Until the German occupation disorders were rare.

e. Stamina.

The Dutch are a strong and vigorous people. Their death rate is ordinarily the lowest of any country in the world. Food and health conditions have deteriorated sharply under the German occupation.

f. Intelligence.

The Dutch are a people of unusually high intelligence. They have no illiteracy. They have an excellent educational system. Dutchmen have won an exceptionally high percentage of Nobel prize awards for achievements in science.

g. Social development.

There is, in general, a very high level of social development.

h. Political capacity.

Except for a tendency to split up into a large number of small parties, the Dutch have shown considerable political capacity. Governmental administration is normally of a very high order. For a small country they have had a number of remarkable political leaders.

i. Attitude towards the United States and the United Nations.

The Netherlands has always been friendly toward the United States. During the Revolutionary War it gave this country financial and diplomatic aid. During the Boer War and the years immediately following, the Dutch were bitter against the British imperialists; but the subsequent British treatment of the Boers served to remove this hostility. In recent decades, the Dutch and British have moved closer together. The security of the Netherlands on the continent, its large shipping interests and colonial possessions made for close dependence upon Great Britain. The Dutch have had a strong antipathy toward Soviet Russia; and, until the German attack on Russia, the Netherlands Government had not recognized the Soviet regime. The loss of large investments in Czarist Russian bonds and the alleged communist activities in the East Indies were contributing factors in producing this attitude. Queen Wilhelmina and her government have now loyally accorded Soviet Russia their full cooperation in the war against Germany.

20. Living Conditions

a. Standard of Living

The standard of living in the Netherlands was, before the present war, very high, probably the highest of any country in Europe. The Dutch had extensive foreign investments and large investments in the colonies, especially the East Indies. While there were no large fortunes corresponding to the great American fortunes, there were nevertheless many well-to-do people. The upper middle class and wealthy people enjoyed a standard of living comparable to that enjoyed by the same classes in England and the United States. The peasants had a standard of living not so good as that of the farmers of our best agricultural states, but higher than that of the peasants of most European countries and much better than that of the vast majority of rural people in our border and southern states. The laboring class had not attained the standard of living of the American laborers in the northern industrial centers. However, there were no distressed areas of any size. The price of vegetables and milk was fairly low, as the country produced enormous quantities of both. Clothing was more expensive. The Dutch people of all classes were exceptionally well housed by European and even American standards. During the depression the Netherlands government undertook a housing program so extensive that by 1937 there was actually a surplus of houses and apartments, and as a result the bottom had dropped out of real estate values in the large cities.

b. Social security legislation

The Netherlands government in the course of the past 40 years had developed a comprehensive system of social security. In 1938 nearly half of the population was insured under the laws covering disability, old age pensions, widow and orphan pensions, and medical aid. The State provided much medical treatment; in 1937 nearly a million patients received free medical treatment at home

and another 2¼ million in public institutions. While the money income of the Netherlander was on the average much lower than that of the American laborer and lower middle class, his free income was probably considerably larger.

c. Cost of Living

Wages, when compared with those of workers in the United States, were low but food prices were also comparatively low. In Appendix II, Table I prices of 39 important food and household commodities are given as of October 1939, when prices were tending to increase. The real wage index becomes comparatively high when compared with food prices as they generally pertain throughout Europe.

However, since the German occupation of the Netherlands, the standard of living has dropped to a depth that can hardly be fathomed. The cost of living has gone up 40% between May, 1940 and February, 1942 and wages have declined. Whole industries have become idle. The bulb-growing industry has virtually been destroyed; there is no longer any diamond-cutting industry. Many other industries have been forced to reduce working time to three days a week. The shoe industry is practically idle; clothing factories cannot get the necessary raw materials. Since almost one-half of the normal employment in the Netherlands industries depends on the Dutch East Indies, the loss of these colonies has forced working hours and wages to a low figure. Only ship building and factories engaged in the manufacturing of military equipment have regained normal or above normal employment. The food rations indicate how the standard of living has declined (see Appendix II, Table II). Even where legal rations exist the commodity is not always available and the quality of those obtainable is often so poor as to make them unfit for consumption.

21. Labor

a. Industrial capacity of workers

Though not so highly industrialized as its neighbor Belgium, the Netherlands has nevertheless a large industrial population. In 1939, 40% of the persons gainfully employed were engaged in manufacturing industries as against 20% in agriculture and 22% in commerce and transport. That Dutch laborers are highly efficient is demonstrated by the fact that the Dutch have developed industrial plants which are among the most advanced of their kind in the world. As examples of this, their electric light bulb, shipbuilding, textile and margarine industries may be mentioned.

b. Skilled labor available for hire

In 1930 the number of workers engaged in the leading industries was as follows: earthenware and glass, 40,084; diamond, 6,919; printing, engraving, photography, 30,867; building construction, 257,466; chemical industry, 25,956; woodworking, 57,748; leather and rubber, 42,766; mining, 51,449; metal industries, ship and carriage building, 237,421; paper, 21,271; textiles, 88,295; gas and electricity, 20,296; food and consumption goods, 218,824.

c. Unemployment

The World War and the depression of the thirties played havoc with normal employment in the Netherlands. Beginning in 1937 the peak of unemployment had been reached and there was a return to more normal conditions. The following statistics of unemployment indicate this trend:

1935	36.3%	(excluding	agriculture)	were	unemployed..
1936	36.3%	"	"	"	"
1937	29.2%	"	"	"	"
1938	27.2%	"	"	"	"
1939	21.8%	"	"	"	"
1940	22.8%	"	"	"	"

d. Rates of pay

The average daily wage for workers (male and female) in mines, industry, transportation and commerce in 1938 (latest available) was 3.54 florins, or $1.95. This is lower than the 1929 average yet in real wage it is higher. The average rates of pay per hour for some occupations was as follows: permanent laborer in an artillery factory $0.423; experienced but not skilled chemical workers, $0.291; skilled metal workers, $0.346; experienced but not skilled metal workers, $0.302. The average hourly pay of all laborers in the Netherlands was $0.319; for Amsterdam the figure was higher, namely $0.379. A detailed classification of wages according to industries is given in Appendix II, Tables III and IV.

Approximately $776,600,000 were earned in 1938 by 1,328,000 persons, or about $600 average per worker. Although this figure for 1938 is not nearly as high as the best years 1929 and 1930, yet in real wage it is only slightly lower than the 1929 real wage-although much lower than the 1930 and 1931 real wage level.

22. Public Health

This paragraph has been prepared by the Surgeon-General's Office.

23. Education

The Netherlands has always taken a prominent place among the European countries in the sphere of education. The Netherlands was the first European country to centralize its education under a series of official school laws, and it is at the head of the list in the matter of state expenditures for education. Its educational system is complicated by the fact that various types of public and voluntary association schools exist under varying degrees of state control and subsidy. The elementary Education Act of 1920 guaranteed the financial equality of both public and private elementary education. Teachers' salaries are paid by the State, and operational costs are defrayed by the municipality for both public and private schools. Private high schools receive some subsidy, and private universities only small sums.

Elementary schools are based upon the Compulsory Education Act, according to which children from 6 to 13 years of age must attend school. Training of teachers for elementary education is carried on under state subsidization in national, municipal and private normal schools, which in 1939 totaled 89.

Secondary education is of two types. The general and classical types are taught in the Gymnasia, the Lycea, and the Municipal High Schools. Technical training is given in various types of technical high schools or junior high schools. The Gymnasium is entirely devoted to classical training in preparation for the university. The Lyceum, on the other hand, delays its designation of a choice of a career until after several years of orientation. The Municipal High Schools give excellent training both in the arts and sciences.

Education is closely connected with the economic life of the country. Agriculture, industry, commerce, navigation, fishery, mining, arts and crafts receive considerable attention in specialized schools on the elementary, intermediate and secondary levels.

The Netherlands is proud of its universities and technical colleges or academies. There are six universities--the state

universities at Leiden, Utrecht and Groningen, the municipal university at Amsterdam, the (Protestant) Free University at Amsterdam, and the Catholic University at Nijmegen. The total university enrollment in 1939 was 9,470. In addition, there are the Technical College at Delft, the Commercial College at Rotterdam, the Agricultural College at Wageningen, and the Catholic Commercial College at Tilburg. The total enrollment in 1939 in these four schools was 3,035. (See the chart of the Dutch educational scheme in the accompanying figure.)

The standard of education is high. Illiteracy, according to the latest available statistics, was less than ½ of 1%. The Dutch Statistical Bureau no longer publishes statistics on illiteracy. The study of the English language is compulsory after the fifth grade. As linguists the Dutch probably hold first place among Europeans, i.e., a larger proportion of the people read, speak and write foreign languages than in any other European country.

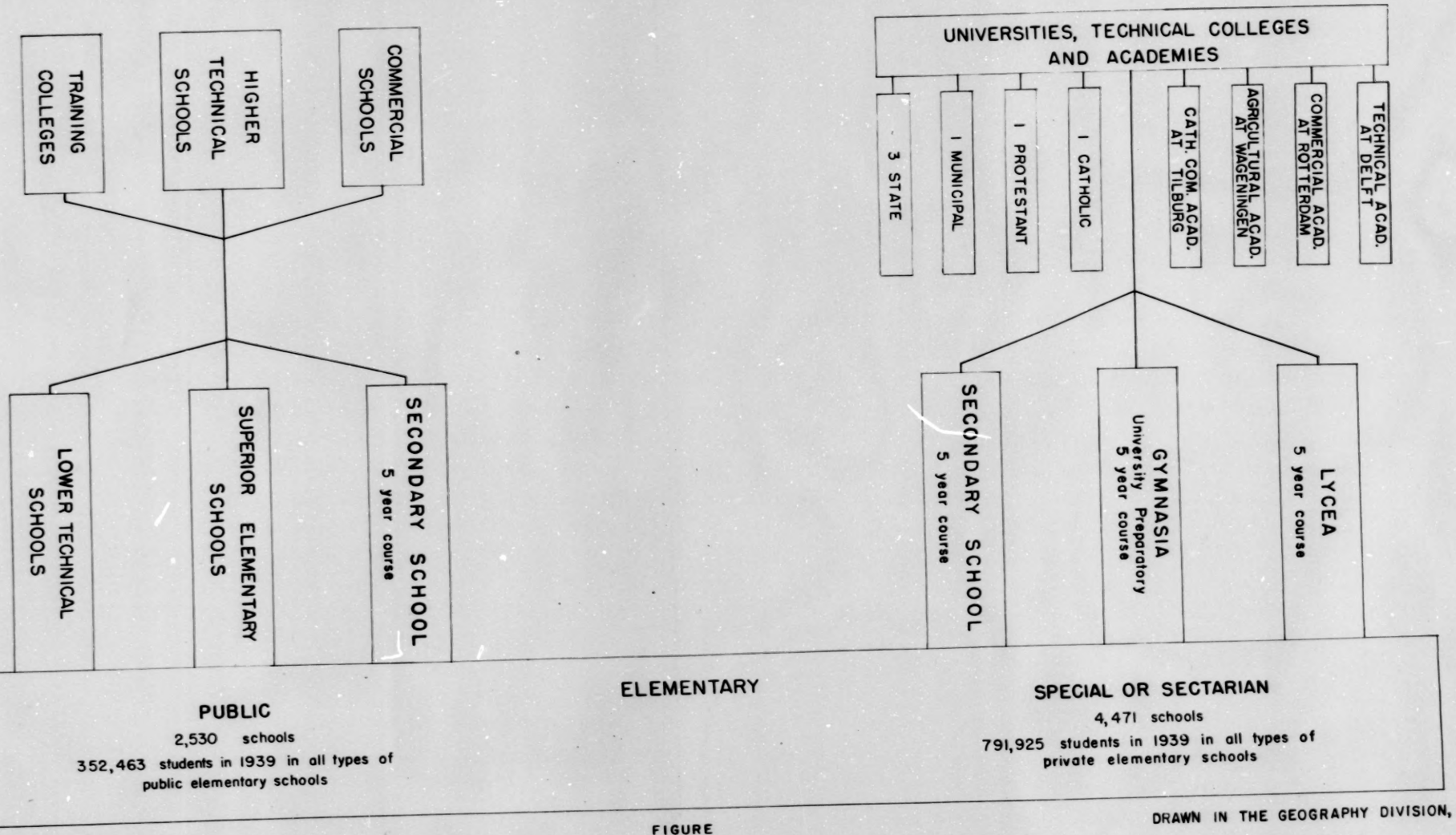
The chief feature of the state educational policy has been state support to denominational or parochial schools. It was on this policy that the Catholic and Protestant political parties united to form a "Christian Front."

Before May, 1940, control of educational matters in the Netherlands had been in the hands of the Minister of Education, Arts, and Science. With the advent of the Nazi occupation, there naturally developed a systematic subjugation of all schools. To date, the historic university at Leiden and the fine technical college at Delft have been closed, and the replacement of professors has gone on elsewhere. The Nazis have established a Department of Culture and Public Enlightenment under the leadership of a Dutch Nazi, J.T. Goedewaagen, while another Dutch Nazi, Professor J. Van Dam, has been made secretary-general of the Department of Education. Some progress has been made in Nazifying the public schools but the private schools have been very uncompromising. The Inspector General of Education has threatened drastic measures to reduce the private schools to conformity.

PROVISIONAL EDITION

CHART OF THE EDUCATIONAL SYSTEM IN THE NETHERLANDS

ANY OF THESE SCHOOLS CAN BE EITHER PUBLIC OR SPECIAL, I.E., SECTARIAN



NO. 617, JULY 1, 1942 FREE

FIGURE

DRAWN IN THE GEOGRAPHY DIVISION, O.S.S.

24. Religion

According to the 1930 census 36.4 per cent of the population belonged to the Roman Catholic Church, thus making it the largest single religious community in the country. The Netherlands Reformed Church, formerly the state church, embraced 34.4 per cent of the population in its membership, but minor separate Reformed Church groups accounted for an additional 8.7 per cent. The membership of other denominations was so small as to be almost negligible. Over 14 per cent of the population expressed no religious preference. Thus the Netherlands is practically a two church country. The Reformed churches are Calvinist, or Presbyterian, in doctrine and government.

While Catholic strength and influence has increased greatly during the past three-quarters of a century, the old Calvinistic traditions still strongly control the national life. Religion plays a very large role in the life of the country. The issue of government subsidization of religious schools was for decades a bitter issue in politics. A coalition of religious parties, - Catholic, Anti-revolutionary and Christian Historical - has governed the country almost continuously since 1918. Dutchmen are more theologically minded than most people and more inclined to take definite religious positions. There is a sharper cleavage between church and non-church people than elsewhere.

The strong religious character of the Dutch people is of the greatest importance in the present situation. Both the Catholic and Reformed churches have stood adamantly against the introduction of Nazi ideology and practices in the Netherlands. Unless the German authorities can destroy the powerful influence of the churches, they will never receive the cooperation of more than a small fraction of the population.

25. Public Order and Police

a. Respect for Law and Order

Up to the time of the German occupation the Dutch were a law-abiding people. The Netherlands was a very orderly country, with relatively little crime. With the German occupation, violence has increased and juvenile delinquency has become a serious problem.

b. Control over Outlying Areas

The Netherlands is a small country and by means of its system of national police every section of the country was well policed.

c. Types of National Police

The police system of the Netherlands was extremely complicated. At the time of the invasion, plans were under way for a reorganization of the whole police system, with the object of bringing about greater unification. The Dutch were not able to carry out the plan. However, the police system is now being unified under German control. For our purposes, the national police may be divided into Marechaussee, Rijksveldwacht, Military Police, and Waterscouts.

(1) Marechaussee

This is a semi-military police organization. With respect to equipment, uniform, organization and discipline it functioned under the Minister of Defense. With respect to its work and competence it functioned under the Minister of Justice. An army officer, with the rank of Colonel but with the title of Inspector, commanded the corps. The Marechaussee were divided into four divisions, each commanded by a chief officer (major). Each division was divided into three or four districts, with an officer called a subaltern in charge of one district. Each district was in turn divided into ten to twenty brigades commanded by guardmasters, called wachtmeesters. In May, 1940, the Marechaussee

120027

numbered 24 officers, 460 lower officers and 752 ordinary Marechaussee, of which 552 men were mounted.

The chief functions of the Marechaussee were: the policing of the borders, supervision of aliens, and supporting local police in case of major disorders or disturbances.

(2) Rijksveldwacht (National Field Guard)

This corps was directly and only responsible to the Minister of Justice. The organization was headed by an inspector, assisted by 11 district commanders. The districts were in turn divided into brigades composed of 135 brigadier commanders, 154 brigadiers and 1,065 national field guardsmen. Altogether the personnel totaled, in May, 1940, 1,367 men.

The National Field Guard served principally as a rural police. The national investigators or detectives also belonged to this corps.

(3) Military Police

This was a wholly military police organization, independent of the semi-military Marechaussee. Their functions were to guard military equipment, railroad stations, troop movements, arrest of deserters, prosecution of infractions of military rules and regulations.

Its chief official was called an Inspector. The corps was divided into 5 divisions, and 17 subdivisions. At the time of the invasion the corps consisted of 23 officers and 1,800 minor officers and men. When the Dutch army was demobilized in May, 1940, the military police likewise went out of existence.

(4) Waterschouten (Water Scouts)

This was a separate corps whose function it was to police the enormous network of waterways in the Netherlands.

d. City Police

The chief city police official, or rather chief city-national official, was the Chief Commissioner of Police as he was called in five towns, or the Commissioner of Police, as he was called in 56 towns. They were appointed as responsible to the Crown and also suspended and removed by the Crown. However, they were paid by the city. They were subordinate, as far as their work was concerned, to the mayor and the justice department of each town. In smaller towns the mayor himself was actually head of the police force.

In January, 1938 the total strength of the police force in 53 towns which had a population of 20,000 or over was 8,686 men. The total number of communities in the Netherlands is about 950. At the time of the invasion the total number of municipal police in the Netherlands may be estimated as being about 11,000 men.

The ranks of policemen from the lowest up are as follows: agent, brigadier, inspector, and chief inspector.

e. Under German Control

The Germans, in addition to imposing their own police upon the occupied country, have also thoroughly reorganized and centralized the Dutch police system. After the demobilization of the Dutch army the Marechaussee on July 5, 1940, was detached entirely from the military and made into a civilian police organization under the Minister of Justice. The military police were disbanded entirely with the army. Also, the personnel of the Marechaussee, the Rijksveldwacht, and the Municipal Police was increased. About 400 officers and 8,000 men from the demobilized army joined these various branches of the police. Centralization and uniformity were created by making the Marechaussee and the Rijksveldwacht practically identical, so that the latter in time would be absorbed by the former. The Marechaussee was placed under the leadership

of a General Inspector assisted by a general director, both responsible to the Minister of Justice. Likewise, standardization of equipment, uniforms and organization was provided for all Municipal Police.

In addition to the Dutch police system the Germans have introduced their own two corps of Ordnungspolizei and Sicherheitspolizei. The chief of the Ordnungspolizei was Schumann. The exact number of German police in these two classifications is not available. Both the Ordnungspolizei and the Sicherheitspolizei are under the Generalkommissar für Sicherheitswesen who bears the title Höherer S.S. und Polizeiführer. This chief is presumably Rauter whose position is directly under the Reichskommissar Seyss-Inquart.

26. Press, Propaganda and Censorship

a. Newspapers and Magazines

Before the German invasion the periodical press of the Netherlands was very extensive, considered from the point of view of the number of publications as well as the diversity of opinion expressed. There were in existence approximately 4,000 newspapers, commercial periodicals, and trade or club organs as of May, 1940. In proportion to the population this is indeed a high number. Practically every shade of opinion, representing the numerous political and religious sects of the country, was expressed in some publication. Every town of over 20,000 inhabitants had newspapers, and there were provincial newspapers as well. There were no papers with a large circulation. In fact, the circulation of most dailies was surprisingly small, especially when the compactness of the population is taken into consideration. Hence, as far as the press was concerned, public opinion in the Netherlands was molded by a highly diversified press, and not by a few large metropolitan papers.

Nor had chain journalism made much progress in Holland. In Amsterdam, the owners of De Telegraaf published the Courant-Nieuws van den Dag, and the Nieuwe Rotterdamsche Courant published the Vaderland in The Hague, but with these exceptions the chain was unknown.

Owing to this keen competition among the newspapers of the country, the Dutch press had become famous for its high standards of journalistic independence and authenticity. This was enhanced by its organizational policy. The management and editorial staffs were completely separated. News was objectively reported and not colored by distortion or one-sided selection.

There were a very large number of religious and political papers and trade periodicals which appeared weekly, fortnightly, monthly or quarterly. In their own circles these were very influential and powerful.

Dutch papers devoted much space to foreign news. Its reliable reporting of foreign news made several of the Dutch newspapers favorites at foreign newsstands.

Among the larger newspapers, the Nieuwe Rotterdamsche Courant was widely regarded as the best general newspaper of the country. It had a fairly large national circulation and the largest foreign circulation of any of the Dutch papers. The Telegraaf of Amsterdam and its associate, the Courant Nieuws van den Dag, had the largest circulations. In contrast with the staid character of most Dutch journals, these two papers were a bit sensational. The Algemeene Handelsblad specialized in financial, industrial and commercial news, and, within its field, it was regarded as an excellent paper, even outside of Holland. The chief party organs were the following: De Standaard, Anti-revolutionary Party; De Nederlander, Christian Historical Party; De Maasbode and De Tijd, Catholic Party; Het Volk (Amsterdam), Vooruit (The Hague) and Voorwaarts (Rotterdam), Social Democratic Labor Party; Het Nationale Dagblad, National Socialist. De Nieuwe Rotterdamsche Courant was Liberal but not a party organ. See Appendix III for fairly complete list of the important Dutch newspapers.

There are now published two semi-official periodicals of the Netherlands government in exile. These are Vrij Nederland (London; all Dutch) and Knickerbocker Weekly (New York; Dutch and English). Both appear weekly.

An independent press, reflecting every shade of political and religious opinion, could not be tolerated by the Nazi occupation regime. As of October 1, 1941, no less than 53 dailies, or 1/3 of the total, and 520 of the 650 periodicals were suppressed by the Nazis. Also, the greater part of 4,000 trade papers and club organs discontinued publication. Now there exists in the open only a handful of Nazi controlled publications. The independent editorial character of the Dutch press has been lost. As the leading articles became Nazi inspired, and as a gradual

replacement of editorial staffs began, the circulation dropped off sharply. The influential Nieuwe Rotterdamsche Courant lost its readers by thousands. Johan Huyts, an ex-communist converted to Nazi doctrine, was made editor-in-chief. De Standaard, the official organ of the Anti-revolutionary Party, was entrusted to Max Blokzijl, former Berlin correspondent of the Algemeen Handelsblad and the "Lord Haw Haw" of the Netherlands. Blokzijl has also been named to the chairmanship of the Press Guild, a division of the newly created Nazi Culture Chamber. De Maasbode, after a series of suspensions, was finally prohibited entirely. Other Catholic papers were provided with Nazi editors and a few still manage to publish under the old management. The Groene Amsterdamer was one of the first periodicals forced to discontinue.

For the minor publications there was even less regard. The many local and provincial newspapers were forced into swift obedience and could print only what the Nazified General Netherlands Press Bureau (A.N.P.) designated. The only newspaper which maintained a semblance of opposition was the Algemeen Handelsblad; but its editor was soon imprisoned and has only recently been released.

There were some papers, however, which welcomed German interference. Both the Nationale Dagblad and the weekly, Volk in Vaderland, had been published by Dutch Nazis before the invasion. The Deutsche Zeitung in den Niederlanden, introduced in June, 1940, is the official German language newspaper for the Netherlands.

The journalists of the Netherlands had been united in the Dutch Journalists' Circle, an organization devoted to the maintenance of high standards of reporting and editing. This organization has been taken over by the Nazis and its members have been organized into a semi-military body.

Apparently an extensive underground press has developed. According to reports, one underground paper has a circulation of 20,000.

b. Effective Propaganda

Dutch cultural history conforms to its political development. The provinces had always been centers of cultural as well as political activities. Provincialism, i.e., love for the province, runs high, since each has had its own unique history. The fact that each province has its own chief newspaper is part of this development. Any propaganda which plays upon important provincial developments of the past, upon their struggles for liberty and against tyranny, would be very effective. The provinces are bound into national unity by a strong love for the House of Orange and its historic position in securing Dutch release from the tyranny of Spain. Any propaganda based upon this fight for liberty and for toleration would be effective. The religious factor is another potent force in Dutch life. It must be remembered, however, that there are many religious sects in the Netherlands, and also, that, although there is a Protestant majority, the Catholic minority is very strong and active. Also, the Dutch are particularly proud of their great achievements in the arts and sciences. The Germans recognized the propaganda value of this cultural history and German "schools" have been busy pointing out the Germanic origin of the most famous Dutch painters and scientists.

c. Radio

The radio broadcast was an important factor in Dutch cultural life. There were no commercial broadcasts in the Netherlands. The broadcasts were paid for by voluntary associations or associations which determined the nature of the broadcast. There were four large associations with a membership of 600,000; one general (A.V.R.O., the largest); one Protestant (N.C.R.V.); one Catholic (K.R.O.); and one labor (A.R.A.), and several smaller associations. Through subscriptions paid by the members and from

the advertising in periodical publications, broadcasting expenses were paid. These associations leased time from the independent station at Hilversum or had stations of their own. The government exercised control over programs only in so far as these affected the moral and physical well-being of the State. More recently the government and the four large associations had formed a company to expedite organizational controls and to centralize facilities. Other than that, the State left the broadcasting associations to themselves.

In broadcasting, very strict adherence to the approved text of the program was enforced. Party politics in the narrow sense were not permitted. Broad principles relating to religion, politics, economics, etc. were admitted.

The latest estimate (1940) of the number of registered radio sets is 1,086,513, or 160 per 1,000 inhabitants. This is a misleading figure, however. A reliable source states that probably 25% of these registered sets are used by more than one household by means of several loudspeakers served by a single set with multiple extension wires. There was, in recent years, a great increase in the sale of all-wave receiving sets in the Netherlands.

In spite of the rigid Nazi control of Dutch radio broadcasting, nothing seems to be able to prevent the Dutch from listening to foreign broadcasts. Every loyal Netherlander listens to foreign radio broadcasts regularly. Even the Germans have relaxed their rigid enforcement of the law prohibiting reception of an English broadcast, because it is known that every one listens to it. The B.B.C. is heard most frequently but the Dutch program broadcast from Boston is also eagerly received.

SECTION IV CONFIDENTIAL

POLITICAL

27. General

The Netherlands itself has been under German occupation since the middle of May, 1940. Dr. Arthur Seyss-Inquart, with the title of Reichs Commissioner, is in charge of civil administration and General Friederich Christiansen is the German military commander. Anton Mussert, the leader of the Dutch National Socialist Party, has not yet been given a government position, even a minor one; and there is no evidence that he exercises any great influence in the German administration, though his party is now the only one permitted to exist. But the second man in the party, Rost van Tonningen, has been given the two very important posts of Secretary-General of the Department of Finance and President of the Netherlands Bank. Other Dutch Nazis have received appointments as directors-general of departments, as commissioners of provinces, and as mayors; but the vast majority are the old permanent civil servants. There is much passive resistance on the part of the populace, considerable sabotage and occasionally overt acts of hostility. A large number of Dutchmen have been executed for anti-German activities. Many of the old political leaders are in concentration camps or in jails.

The legitimate government of the Netherlands is carrying on the war from London. Queen Wilhelmina is giving remarkably effective leadership to her people. The ministry, with Dr. P. S. Gerbrandy as the first minister and Minister of Warfare, is assisted by an extraordinary advisory Council. In the Far East the Dutch government is prosecuting the war against Japan by such naval and military units as it still commands in that region. A board of 4 members, composed of three leading East Indies officials and the Netherlands minister to Australia, was appointed in April, 1942, to look after Dutch interests and to supervise the work of

agencies in that part of the world. Melbourne is the seat of this board.

The Netherlands Government was a constitutional monarchy, with Queen Wilhelmina as the ruling sovereign. The parliament consisted of two houses: a First Chamber composed of 50 members and a Second Chamber of 100 members, chosen by a system of proportional representation. The actual direction and administration of the government was in the hands of a ministry, nominally chosen by the Queen but responsible to parliament. The country was divided into 11 provinces. The provinces had small single-chamber councils. An executive officer, the Crown Commissioner, was appointed by the central government. He was responsible in part to the central government and in part to the provincial council. City governments conformed to the same pattern, with the mayor as the executive officer.

The Netherlands had a multiparty system. The largest party, the Catholic Party, controlled less than a third of the members of the Second Chamber, and the second largest, the Socialist Party, had less than a fifth. No less than 10 parties were represented in the last parliament. This multiplicity of parties often made the effective operation of the parliamentary system very difficult.

The only groups hostile to the United States are the National Socialists, and probably also the Communists.

Until the German invasion the Netherlands rigidly followed a policy of isolation and neutrality. It is now a very active member of the United Nations.

28. Government

a. The Normal Regime

(1) National Government.

(a) Crown.

The Netherlands government is a constitutional monarchy. The present sovereign is Queen Wilhelmina, who succeeded her father, King William III, in 1890, but actually did not assume the crown until 1898, when she became of age. The only other members of the royal family are Crown Princess Juliana, her consort, Prince Bernhard, and their two small children, Princesses Beatrix and Irene.

(b) Ministry.

The government is administered by a ministry chosen by the Queen but responsible to the parliament, called the States General. Technically there is no prime minister and the responsibility of the ministers is individual rather than collective, certainly far more so than is the case in Great Britain. The person selected by the Queen to form the cabinet bears the official title of Minister-President of the Council of Ministers. He presides over the cabinet meetings and is in a vague way responsible for the general policies of the ministry; and though his authority in recent years has increased somewhat, his position is still by no means like that of the prime minister of Great Britain or of the British Dominions. The size of the ministry is determined by Royal decree. In recent decades it has varied from 8 to 11.

(c) Parliament.

The States General is composed of two houses, - the First Chamber and the Second Chamber. The Second Chamber has a membership of 100, elected by the voters by a system of proportional representation, for a term of four

years. The First Chamber has a membership of 50, elected by the members of the provincial councils, for 6 year terms, with one-half retiring every three years by rotation. The Sovereign has the power to dissolve either or both Chambers. The power of the First Chamber is limited to approving or rejecting bills; only the Second Chamber may amend Government bills or introduce new bills. In contrast with most parliamentary governments, members of parliament must resign their seats upon taking a cabinet position. (See accompanying figure of the National Government.)

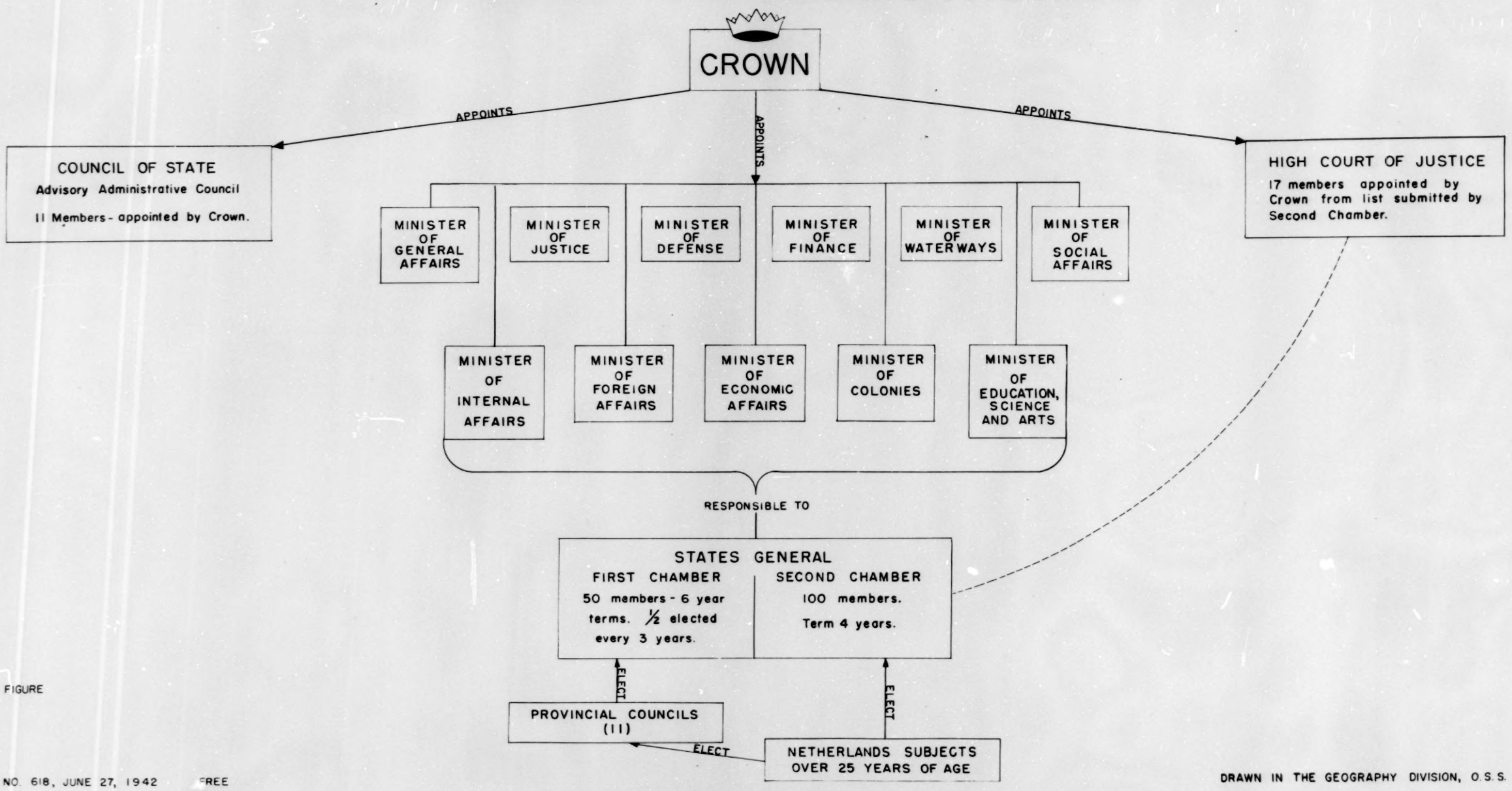
(d) Council of State.

All important legislative proposals must be submitted by the ministers to the Council of State before introduction in parliament and all important administrative and executive matters must be submitted to it before action is taken. This Council of 14 members, appointed by the Crown (in effect the Cabinet) has only advisory power.

(2) Provincial Government.

The Netherlands is divided into 11 provinces. The names of the provinces are as follows: North Holland, South Holland, Utrecht, Groningen, Friesland, Drenthe, Overijssel, Gelderland, Zeeland, North Brabant and Limburg. Each province has its own representative body, called the Provincial States, varying in size with the population. In the most populous province, South Holland, the membership is 82; in the least populous, Drenthe, it is 35. Its members are elected by the voters for 4 year terms. All provincial ordinances and budgets must be approved by the Crown. At the head of the provincial government stands the Queen's commissioner, who serves both as agent of the central government and as the executive officer of the province. Attached to him is an executive committee of the provincial council for the purpose of assisting him in administration and of controlling him in so far as he is a provincial official.

ORGANIZATION OF THE NETHERLANDS GOVERNMENT



FIGURE

NO. 618, JUNE 27, 1942 FREE

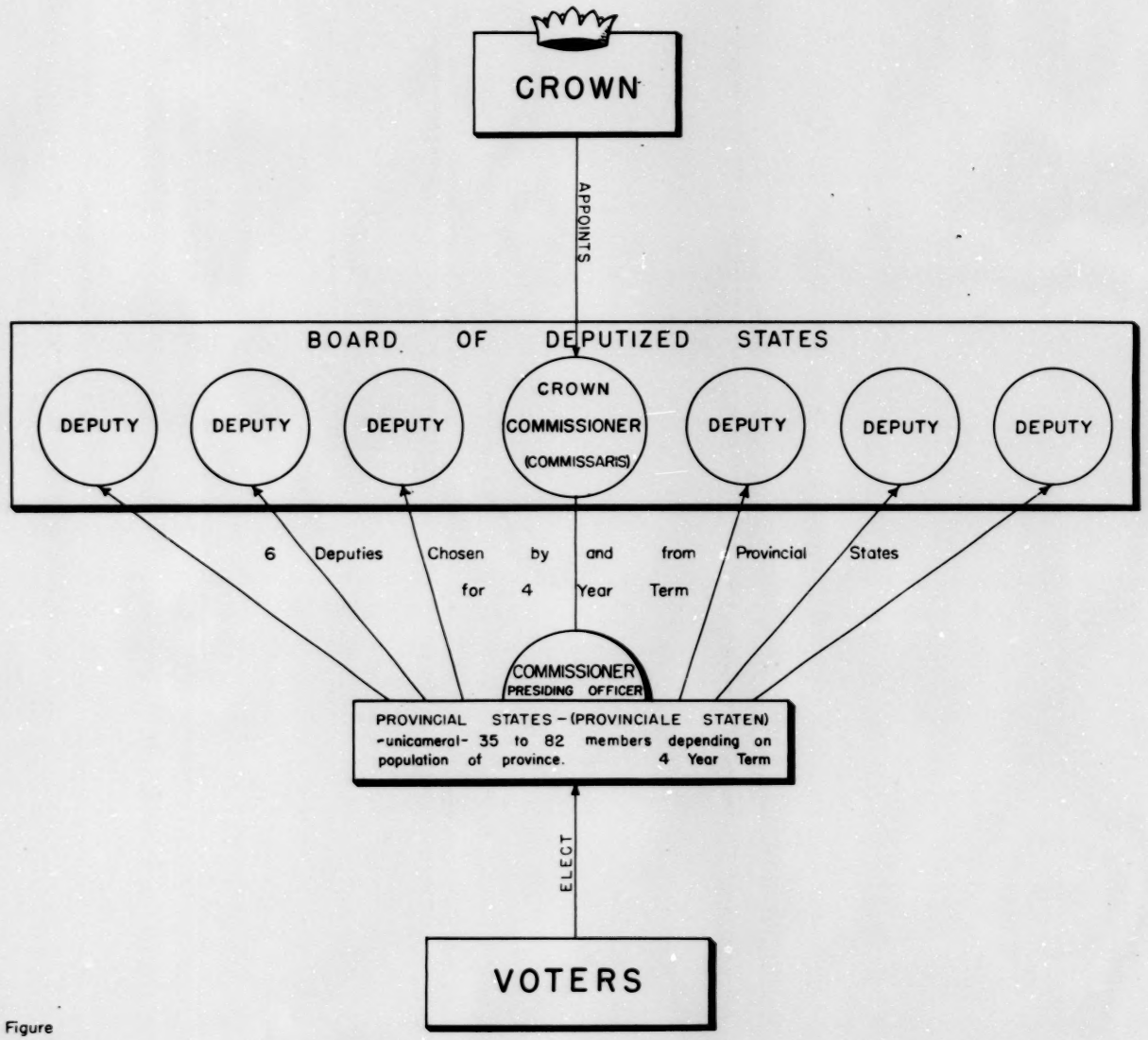
DRAWN IN THE GEOGRAPHY DIVISION, O.S.S.

The Commissioner presides over the provincial council as well as the executive committee and in the latter has the deciding vote in case of a tie. Provincial ordinances and budgets must be approved by the Crown. (See the accompanying figure.)

(3) Municipal Government.

The general structure of the municipal governments is very similar to that of the provinces. A council, varying in size with the population, elected by the voters of the municipality, with an executive committee, whose members are called wethouders, and mayor, called burgemeester, constitute the main organs. Like the commissioner of the province the mayor is appointed by the Queen upon the advice of the Minister of Internal Affairs, and is the agent of the central government as well as an executive officer of the municipality. The ordinances of the municipal council are subject to veto by the Crown, which in effect means the Minister of Internal Affairs; and the municipal budget must have the approval of the Deputed States (the executive committee) of the Provincial Council. The mayor stands at the head of the municipal administration, and, as the agent of the central government he is especially charged with the maintenance of law and order. The mayor and the alderman (wethouders) not only serve as the executive committee of the Council but, as individuals, stand at the head of the administrative agencies and services. There are no specific departments. The various municipal agencies and services are grouped and assigned to the mayor and alderman as they, as an executive committee, deem wise. (See the accompanying figure of a typical city government.

ORGANIZATION OF PROVINCIAL GOVERNMENTS



Figure

CROWN

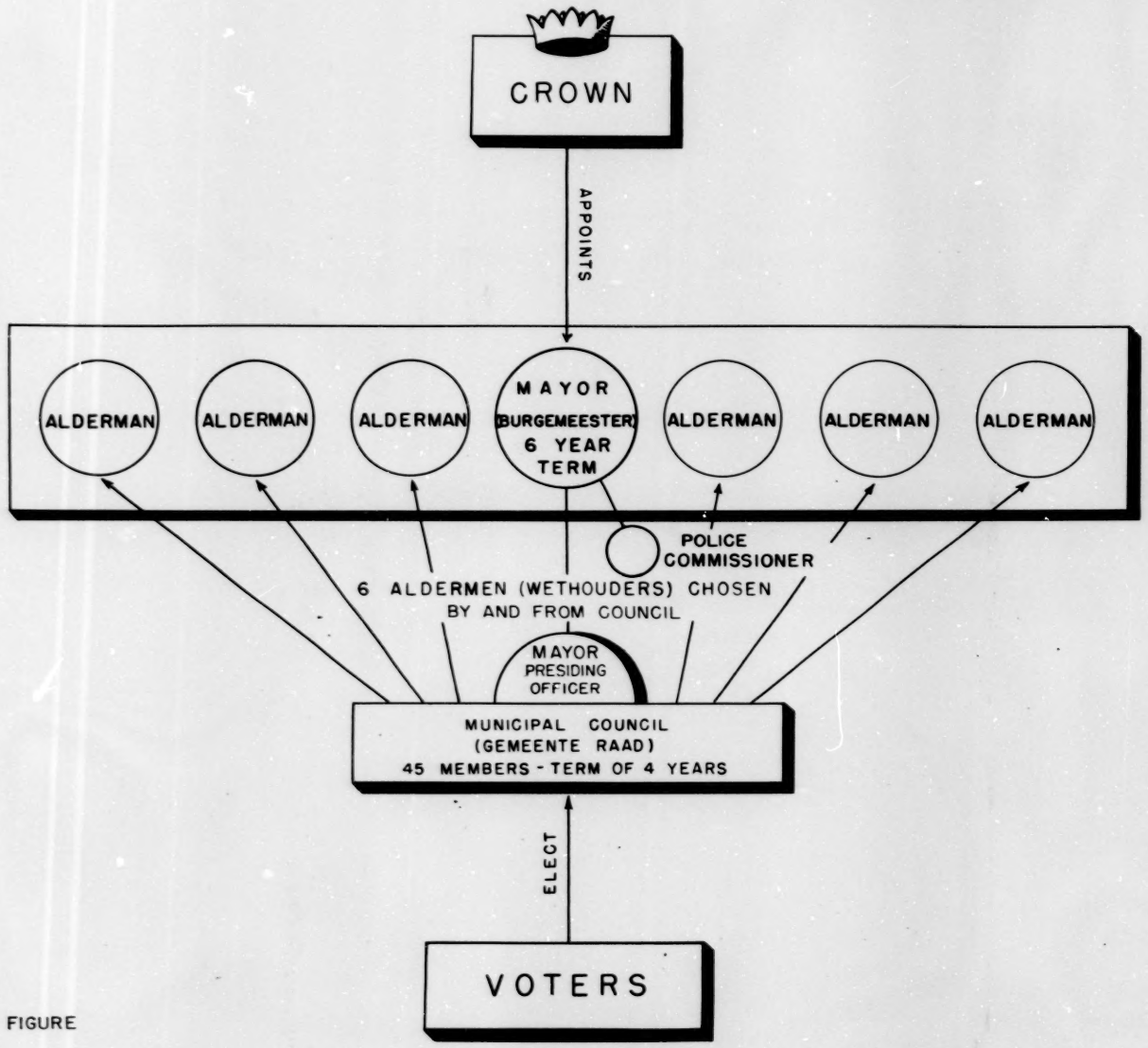
Queen Wilhelmina acting upon advice of ministers.

Board of Deputized States serves as an executive committee of the Provincial States and has charge of the provincial administration, the Board distributing the agencies and services to the individual members as it sees fit.

MAP NO 614 FREE

JUNE 27, 1942 DRAWN IN GEOG. DIV., Q.S.S.

ORGANIZATION OF THE GOVERNMENT OF THE MUNICIPALITY OF AMSTERDAM



FIGURE

CROWN

Queen Wilhelmina acting upon advice of ministers.

Mayor and aldermen form executive council and distribute among themselves the various municipal bureaus, agencies, and services for administration. In 1938 there were the following bureaus and services:

Labor Exchange	Building Inspection	Fire Protection
Archives	Goods Inspection Service	Museums
Taxes	Childrens Clothing and Feeding	Education
Markets	Cattle Market and Abattoir	Unemployment
Cemeteries	Medical and Health Service	Electrical Works
Housing Service	Homes For The Aged	Water Supply
Public Works	Air Protection Service	Expenditures
Gas Factories	Municipal Lending Bank	Sanitation
Secretariat	Municipal Theatre	Receiver
Telephone	Trade Information	Hospitals
Police	Washing, Cleaning, Bathing, and Swimming Institutions	Tram
Harbor Service		Discount Bureau

MAP NO. 615
JUNE 24, 1942

DRAWN IN GEOGRAPHY DIVISION, O.S.S.

FREE

b. Netherlands Government in Exile--London

Shortly after the German invasion began, the royal family and the ministry moved to England. A few months later Princess Juliana, with her two small children, went to live in Canada. Jhr. D. J. de Geer, leader of the Christian Historical Party, was prime minister at the time, and also served as minister of finance. An old man, steeped in the traditions of isolation and neutrality, De Geer was totally unable to serve effectively as a war prime minister. His colleagues found his leadership intolerable. He resigned September 4, 1940 and was succeeded by Pieter S. Gerbrandy, the Minister of Justice. The cabinet at the time of the invasion was a national cabinet. In it were representatives of all democratic parties except a few of the smallest. Besides De Geer, H. van Boeijen, the Minister of the Interior, belonged to the Christian Historical Party. The Minister of Waterways, J. W. Albarda and the Minister of Social Affairs, J. van den Tempel, were members of the Socialist Party. The Minister of Economic Affairs, M. P. L. Steenberghe and the Minister of Colonies, Ch. J. d. M. Welter were members of the Catholic Party. The Minister of Education, G. Bolkestein, was a member of the Liberal Democratic Party, though not an active one, and Mr. Gerbrandy belonged to the Anti-revolutionary Party. The Minister of Defence, Col. A. Q. H. Dijxhoorn, and the Minister of Foreign Affairs, Mr. E. N. van Kleffens, were not known to be members of any party. Aside from the resignation of Mr. de Geer there have been a few other cabinet changes. Col. Dijxhoorn resigned in July, 1941 and was replaced by Admiral J. T. Furstner as Minister of the Navy, while Mr. van Boeijen took over the War Department. In November, 1941, both Mr. Steenberghe and Mr. Welter resigned. Mr. Steenberghe was replaced by Mr. P. A. Kerstens, of the East Indies. Mr. H. J. van Mook, Director of the Department of Economic Affairs in the Indies Government, was appointed Minister of

Colonies, but before he could go to London to take office the war broke in the Pacific and he was made Lieutenant Governor-General of the East Indies instead. Prime Minister Gerbrandy thereupon became Minister of Colonies and Dr. J. R. M. van Angeren was made Minister of Justice. Mr. E. F. M. J. Michiels van Verduynen, the Netherlands Minister to London, was added to the Cabinet as Minister without portfolio. Finally, in May, 1942, Dr. van Mook, who was one of the few officials who got out of the Indies before it fell, was made Minister of Colonies. Mr. Gerbrandy became Minister of General Warfare, a newly created office. There has also been some shifting or regrouping of offices. The ministry now (July, 1942) is constituted as follows:

P. S. Gerbrandy - Prime Minister, Minister of Warfare.
E. N. van Kleffens - Minister of Foreign Affairs.
H. van Boeijen - Minister of General Affairs, Internal Affairs and War.
Admiral J. T. Furstner - Minister of Marine.
J. W. Albarda - Minister of Waterways and Finance.
P. A. Kerstens - Minister of Commerce, Industry and Shipping.
J. van den Tempel - Minister of Social Affairs.
G. Bolkestein - Minister of Education, Science and Arts.
J. R. M. van Angeren - Minister of Justice.
E. F. M. J. Michiels van Verduynen - Minister without Portfolio.
H. J. van Mook - Minister of Colonies.
A. A. Soejono- Minister without Portfolio, who was added June, 1942.

The Queen's authority and influence in the government are far greater than they were before the German invasion. Since she stands above parties and enjoys the confidence of all Dutchmen wherever they may be, her position has been greatly strengthened, while the position of the Cabinet, cut off from its popular base, is difficult. The emergency character of the government has helped to increase the power of the prime minister. To supply the deeply felt need of something like a parliament and council of state, an Extraordinary Advisory Council to assist the government was created by Royal decree in April, 1942. The Council will consist of 14 members, appointed by the Queen upon

recommendation of the Ministry. Of the 14 members five will be inhabitants of the East Indies or experts on the country, and two will represent the West Indies.

c. German Administration of the Netherlands

Hitler has placed the Netherlands under a civil and military administration. General Christiansen is the military administrator and Dr. Arthur Seyss-Inquart is the Civil Administrator. To date the Germans have not set up a "Quisling" government. Mussert, the leader of the Dutch National Socialist Party, has not yet been placed in official position, but another leading Dutch National Socialist, Rost van Tonningen, has been placed at the head of the Bank of the Netherlands and been made Secretary-General of the Department of Finance. A few other Dutch Nazis have been made ~~secretaries~~-general of departments, among them J. Schricke, Department of Justice; J. van Dam, Department of Education; Dr. T. Goedewaagen, Department of Culture and Public Enlightenment. Other Dutch Nazis have been appointed provincial commissioners, mayors and judges.

29. Political Parties

a. Dominant Political Parties

For decades there has not been a political party in the Netherlands strong enough to control a majority of the seats in parliament. In the middle of the last century, the political life of the country was dominated by two large parties, - the Liberal and Conservative parties. Two religious parties, a Catholic and Protestant party, entered the field about this time and grew rapidly. As a result, the Conservative Party disappeared entirely; and the Liberal Party declined in strength, and finally was split into two separate parties, - the more progressive group taking the name of Liberal Democratic Party. The Protestant, Anti-revolutionary Party, likewise suffered a split-off, the seceding group calling itself the Christian Historical Union. At the close of the century, the Social Democratic Labor Party was organized and under the leadership of Troelstra, rapidly became one of the largest parties.

With the adoption of proportional representation in 1918, the number of small parties increased still more, for small groups, which under the district system were unable to win a single seat in parliament, were now sure of winning a few seats from the country at large. Another result of the system of proportional representation was the stabilization of the relative strength of the large parties in parliament, since small shifts in voting could no longer cause large shifts in party strength in parliament.

The Roman Catholic State Party, which since 1918 has controlled about a third of the 100 seats of the Second Chamber, is the largest political party. Since the ties which hold the party together are religious rather than social or economic, the party has a marked conservative and a progressive wing. The Catholics are heavily concentrated in the southern provinces of Limburg and North Brabant, though many Catholics are found in all the large cities. Catholics are found in all classes of society, but they are not yet very numerous in

the commercial and industrial upper classes.

Small radical Catholic groups also run candidates, but rarely win a seat. The Roman Catholic State Party favored state support of parochial schools, legislation protecting the family, social legislation in general and the restoration of corporations. It also leaned toward protectionism and state interference in economic life.

The Social Democratic Labor Party was a moderate constitutional, socialist party. It favored the nationalization of industries, a more effective and generous system of social security, and a more rapid development of self-government in the colonies. The party reached its maximum strength in the 1933 and 1937 elections by winning 23 seats in the Second Chamber.

The normal strength of the Anti-revolutionary or Calvinist Party is about 14 seats in the Second Chamber, but under Colijn's leadership the parliamentary strength of the party increased to 17 in the last two elections. Mr. Colijn was regarded as the "strong man" of the country and many persons not belonging to his party voted for it because they wished to see Colijn at the head of the Government. The Anti-revolutionary Party stood for the application of Calvinistic principles to political, social and economic life, but without direct church control. It favored a strong army and navy, governmental economy, state support of religious education and social legislation. This party draws its greatest strength from the farmers and lower middle class.

The Christian Historical Party, an off-shoot of the Anti-revolutionary Party, advocated a policy very similar to that of the parent party, only along more conservative lines. The aristocracy and the old upper class families constitute the backbone of the party. Its strength in the Second Chamber during the last few parliaments has varied between 8 and 10 seats.

For brief biographies of Dutch political leaders see Appendix IV.

b. Minor Political Parties

The Liberal Party represents the remnant of the once great majority party of the mid-19th century. Its strength declined to only four seats in the Second Chamber of the last parliament. Its membership is drawn largely from the industrial and commercial classes. It advocated free trade, maintenance of secular public instruction, and opposed socialization of industry and restriction of free competition.

The Liberal Democratic Party came into existence when the progressive wing of the Liberal Party seceded to form a separate party. Its membership included many intellectuals. It advocated progressive political and social reforms. It opposed state subsidies for religious schools, it favored state aid to agriculture, reform labor legislation and government management of public services of a monopolistic character. Its strength in the Second Chamber of the last parliament was six votes.

The National Socialist Movement first acquired representation in Parliament in the Second Chamber in the 1937 election, when it won 4 seats. It was an imitation of the German Nazi Party, and was inspired and subsidized by it. It favored anti-semitic measures, dictatorial leadership and the corporative state.

The Communist Party, the Dutch section of the Third International, has had three seats in the Second Chamber for nearly the last two decades.

c. Political Groups which are pro-United States.

All political groups, with the exception of the small communist and national socialist parties, are friendly toward the United States. Many ties - historical, religious and commercial - bind the Netherlands to the United States. In his outlook upon life, the Dutchman is very similar to the Britisher and American. The security of their colonies in the Western hemisphere, as well as the liberation of the homeland and the East Indies, is so largely dependent on the war effort of the United States that the Dutch have every reason

to be pro-United States.

d. Political Groups anti-United States

The only political groups hostile to the United States are the Communist and National Socialist parties. The reasons for their antipathy are obvious. The Communist group now is undoubtedly pro-United States, at least, insofar as Russia and the United States are at war against a common enemy.

e. Evaluation of the Relative Strength of the Groups which are pro or anti-United States

The total membership of the National Socialist party does not exceed 100,000 and may be as low as 50,000. Including the Communists among those hostile to the United States, the percentage of the population which is anti-United States cannot be over 5 per cent.

30. Foreign Policy and International Relations

a. General

After the separation of Belgium in 1839, the Netherlands lapsed into a passive foreign policy; and for a hundred years it succeeded, in spite of a precarious geographic position, in maintaining neutrality in wars involving the neighboring Great Powers.

In its determination not to become involved in the quarrels of the powerful nations, the Dutch Government was supported by all elements of her population. So thoroughly agreed on the policy of neutrality and isolation were all Dutchmen that no fundamental issues of foreign policy ever divided the Dutch political parties. For this reason diplomatic technicians, either from the Foreign Office or the diplomatic service, and never political leaders, were selected as ministers for foreign affairs. Their success in staying out of the World War confirmed the Dutch in their policy.

Beginning with the First Hague Peace Conference in 1899 and continuing with the Second Conference in 1907, the Netherlands became the center of a series of international conferences and the seat of the Hague Peace Palace, the Permanent Court of Arbitration, and the Permanent Court of International Justice. The Dutch liked to refer to all this as the "work of The Hague", and pointed to it as a positive contribution to the peace of the world.

The Netherlands became a member of the League of Nations and an active participant in its work. The Dutch did not regard this as a departure from their traditional policy of isolation and neutrality, since the League covenant was not an alliance. The Dutch took an active part in the application of sanctions against Italy in the Ethiopian affair; but when the Germans reoccupied the Rhineland, the Dutch Government, together with the Scandinavian Government, announced that it no longer held itself bound to take part in collective action or to permit the passage of troops in the enforcement of League sanctions. With this announcement, the Dutch Government had returned completely to its old policy of isolation and neutrality. Some attempt was made to develop a policy of collective neutrality with the Oslo States (Denmark,

Norway, Sweden and Belgium), but this came to little. During the last year before the invasion, the Netherlands and Belgium did co-operate diplomatically to a remarkable degree, as will be noted later.

b. Netherlands-United States Relations

The Netherlands is bound to the United States by many sentimental ties —some of them old. From the early Dutch settlement of New York and New Jersey have come down historical, ecclesiastical, and educational associations which still have considerable vitality, as for example when Rutgers University, founded over a century and a half ago by the Dutch Reformed Church, recently gave Queen Wilhelmina an honorary doctor's degree. Dutch financial aid in the Revolutionary War also helped to create sentimental ties. Many Netherlanders have come to the United States and risen to the highest positions in business and professional life. Dutch views and ways of life are very similar to those of the Americans.

For the security of the Dutch colonial possessions in the Western hemisphere the Dutch relied on the American navy; for the security of the East Indies they looked to both Great Britain and the United States. At the present moment, the Netherlands and American governments are cooperating closely, especially in the Far Eastern theatre of war. The large Dutch shipping tonnage has been placed at the service of the United Nations' cause. At the President's suggestion, the Netherlands legation in Washington was recently raised to an embassy.

The only Netherlanders hostile to the United States are the small number of Dutch Nazis and their leader, Mussert, and probably also the even smaller number of Communists.

c. Netherlands-British Relations

At the beginning of the century the relations between the Netherlands and Great Britain were somewhat strained. This was caused by the Boer War. The Dutch regarded the Boers as part of the Dutch race and the Boer War caused much bitterness towards Britain. But the British and the Dutch had too much in common for this to last long.

When the British quickly granted the Boers self-government and gave the Union of South Africa autonomy in the British Commonwealth of Nations, this unpleasant episode was forgotten.

A large number of factors tended to bring the Netherlands into the British orbit. The Dutch feared the rising power of Germany and relied upon British assistance in case of attack. Yet the Dutch Government would not enter into any relations with Britain which might provoke German attack or automatically bring the Netherlands into a general European war. The Dutch were likewise dependent upon the British for the security of their vast colonial empire in Southeastern Asia. And in case of a general war involving Great Britain, the large Dutch merchant marine would also be at the mercy of the British sea power.

During the World War, the Dutch were caught between the hammer and the anvil; and though the Allied blockade caused much hardship and some friction, the sympathy of the Dutch was overwhelmingly on the side of the Allied and Associated Powers.

Since the German invasion of Holland in May, 1940, the cooperation of the British and Dutch has been complete. The headquarters of the Dutch Government is now in London, and from Australia a Netherlands War Board is operating against Japan.

d. Netherlands-German Relations

Ever since the Franco-Prussian War the Dutch have feared Germany. They disliked the Prussian spirit and they feared the plans of the German expansionists. Only during the brief period between the end of the World War and the rise of Hitler were the Dutch free from that fear. Though she feared the German militarists and expansionists, Holland found herself in a position of steadily increasing economic ties with her powerful neighbor. The rapid development of the Rhine industrial hinterland brought increased trade between the two countries and a swelling volume of transit traffic.

Hitler, early in 1937, offered the Netherlands a non-aggression treaty, which the Dutch flatly rejected. Foreign Minister de Graeff declared before parliament that the Netherlands Government considered its inviolability to be axiomatic and it could not be the subject of any treaty. A few days before the attack on Poland began, the German Minister at The Hague gave a solemn assurance that his government would respect Netherlands' territorial integrity.

During the first few months after the invasion, the German authorities treated the Dutch leniently; but when they began to see that they were failing in their efforts to win the Dutch, they began to treat them harshly. It is evident that the Nazis plan to incorporate the Netherlands in the German empire. By the abolition of exchange restrictions and of customs between Holland and Germany the Netherlands has already economically been made a part of the Reich. All the evidence available indicates that the Dutch are putting up a stout and bitter resistance against German control. The Dutch are impatiently waiting for the day of deliverance.

c. Netherlands-Belgian Relations

Dutch-Belgian relations are extremely complicated. One extremely delicate problem arises from the existence of the language question in Belgium, which in recent years had become acute. The people of the northern half of Belgium speak Flemish, a Dutch dialect, and the remaining speak French. Until the last half century, most of the intellectual and cultural life of the country was dominated by the French-speaking Walloons. During recent decades and especially since the World War I the Flemish have steadily demanded greater recognition of the Flemish language and culture. Some of the Flemish radicals, also called activists, yielded to German blandishments in the World War, and, because of their political collaboration with the Germans, were

regarded as traitors by the other Belgians, and especially the Walloons. Many of these fled to Holland after the war. Since some of the Flemish refugee activists advocated an autonomous Flemish state under German protection or union of Flanders with Holland, the situation was extremely embarrassing to the Dutch. Most Netherlanders were indifferent to the Flemish movement and some even hostile to it. The Dutch government has been very careful to give no encouragement to the movement, either directly or indirectly.

Secondly, there are a number of unsettled frontier and waterway problems between Holland and Belgium. In the east there is the "Limburg appendix," a narrow peninsula of Dutch territory about 25 miles long, jutting downward between Belgium and Germany, and astride some of the routes between these two countries. South of the Schelde River the Dutch hold sovereignty over a narrow strip of territory, thus giving the Netherlands control over the mouth of that important river, which forms the entrance to the large port of Antwerp. The Belgians felt that these frontiers had hampered their defense during the war and, now that Belgium was no longer to have the status of guaranteed neutrality, territorial adjustments in the interest of Belgian military defense ought to be made. Unofficially, they put on a drive at the Paris Peace Conference for a rectification of these frontiers. The Peace Conference frowned on the Belgian demands, but it could not remove Dutch resentment against the Belgians for making the demands.

While refusing to yield on the territorial demands, the Dutch government in separate negotiations with the Belgian government sought to reach a settlement of numerous other outstanding questions between the two countries. These efforts failed and were abandoned in 1920. Later on, negotiations were resumed and the two foreign ministers reached an agreement in 1925;

but the treaty was rejected by the First Chamber of the Dutch Parliament. Many Dutch people held that the agreement yielded far too many advantages to Belgium and sacrificed the interests of Rotterdam to those of Antwerp. Secret and unofficial negotiations in the early 30's failed to solve the main difficulties, although some were solved piecemeal.

Fear of the German menace finally brought the two countries closer together. Belgium, which had entered into a military alliance with France in 1920, made a drastic shift in her foreign policy in 1936. Hitler's denunciation of the League of Nations, the Treaty of Versailles and the Locarno Pact, and the German military reoccupation of the Rhineland caused the Belgians to fear involvement in an early war. The Belgian government now sought and obtained release from the military alliance with France and adopted the traditional Dutch policy of isolation and neutrality. Relations between Belgium and Holland now became close. On August 28, 1939, King Leopold and Queen Wilhelmina made a last minute joint appeal to the Great Powers of Europe, tendering their good offices. On the 7th of November of the same year, the King and Queen again made a tender of good offices, but all in vain. When German troop concentrations on the Dutch border pointed to the danger of a German attack on Holland, the Belgian foreign minister, Mr. Spaak, publicly declared that the Belgian Government could not view an attack on the Netherlands with indifference, practically stating that such an attack would bring Belgium into the war immediately in aid of the Netherlands. When finally Germany did attack, it attacked the two countries simultaneously.

f. Netherlands-French Relations

As a great European Power, France's foreign policy was of the utmost importance to the Netherlands; but relations between them were not very numerous. The Netherlands feared involvement in the age-old rivalry between Germany and France, and,

hence, the Dutch disliked Belgian alliance with France. They felt that the alliance brought French military influence to their very border and placed the Netherlands in the direct line of fire between the two powerful rival states. While many Netherlanders admired French culture and found in Paris a spiritual home, others, the more religiously-minded, looked upon the French spirit with misgivings and distrust.

g. Netherlands-Russian Relations

These are important chiefly for their non-existence. The Netherlands government has not yet recognized the Soviet regime, although the Queen has in recent months expressed admiration for Russian resistance against the German attack and promised such support to Russia as her government can give. There are several reasons for the non-recognition of the Soviet government by the Dutch government. One reason is the strong influence of the religious parties in Dutch politics, which all strongly emphasize the anti-religious policy of the Soviets. A second reason is alleged Russian Communist activities and propaganda in the East Indies. Dutch East Indies officials ascribe the disorders which occurred in the East Indies in the 20's to this activity. Thirdly, many Dutchmen had invested heavily in bonds of the Czarist regime; and while they have undoubtedly written these losses off by now, some soreness still remains.

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SECTION V
ECONOMIC

31. General.

a. Summary

The Netherlands is not a country of rich and varied developed natural resources. The chief source of primary production is agriculture. The most important aspect of agriculture in the Netherlands is cattle and dairy production. 69% of the total land area is used either for permanent pasture or crops for feed. However, the country is greatly dependent upon the import market for much of the live stock feed and also for wheat for human consumption. A reduction in the live stock production, in order to increase the agricultural self-sufficiency, was a natural tendency, now accelerated by German occupation.

The meager mineral wealth of the Netherlands consists almost solely of coal. The limited deposits of coal, which are fairly rich and of good coking quality, are found in the southernmost province of Limburg. These collieries could produce enough for domestic use, but before the German invasion as much coal was imported as exported. In forest wealth the Netherlands is one of the poorest of the continental countries. Only 7% of the total land area is in forest, most of which is in pine.

The Dutch fisheries accounted for a great share of the national income. The sea fisheries were particularly important. However, the coastal and inland fisheries, to which the industry must now turn, are fairly considerable.

The Netherlands presents a picture of recent and expanding industrialization. Although 40% of the population is engaged in industry there are no really great industrial centers. Shipbuilding at and around Rotterdam and Amsterdam is one of the largest and most important industries. The textile industry in the Twenthe district is the most concentrated. There is

a fairly large electrical industry concentration at Eindhoven. With these exceptions one can state that the industries are distributed throughout the country and not concentrated in any locality. One reason for this may be that there is very little heavy industry in the Netherlands.

Public utilities in the Netherlands are highly developed in both urban and rural areas. The electrical distribution network is extensive, 99.8% of the country being electrified. Since there is no hydro-electric power all electric-power generators are steam driven. The chief difficulty in the Dutch electrical network was the lack of interconnecting lines between districts, thus making for decentralization. The gas industry is also fairly extensive, serving about 71% of the population. Since there is no natural gas in the Netherlands, the gas supply is almost entirely manufactured coal gas. There was a natural decline in the use of gas in the past decade and now restrictions have been placed upon supplies.

Ice plants and cold storage plants are not particularly popular in the Netherlands owing primarily to climatic conditions and also to local custom. The existing establishments, located at ports and at meat-packing centers, are sufficient to take care of normal needs.

The Netherlands provincial and national governments have consistently followed a plan to extend the facilities of a central water supply to rural areas. The tendency is toward regional distribution systems. In some cases entire provinces are included in such a central supply system. Most of the supply is ground water and little surface water is used.

The Netherlanders are noted for their cleanliness. The low death rate can be accounted for by the high standards of public health which prevail. It is comparatively recently that the Netherlands communities in general began to develop

modern sewage disposal units. In most towns sanitary installations are adequate, nevertheless, there are some relatively large towns in which complete sanitary installations within the home are still lacking.

The transportation system in the Netherlands is dominated by the use of the inland waterways. By far, most of the freight traffic moves over these waterways. The road system is also highly developed and stands second in importance for movement of freight. The Dutch railroads have long suffered from the competition of motor and ship transport. The railroad system is largely a passenger traffic system, and, in order to maintain this business, elaborate electrification of railroad lines has taken place. Commercial aviation ranks fairly high. Amsterdam has been an international air transport center from the time commercial aviation became popular.

Shipping and commerce form the heart of Dutch economy. The Dutch merchant marine was extensive and modern. The port of Rotterdam ranked as the greatest bulk cargo port in Europe and Amsterdam was an important general cargo port. Owing to its geographical location Rotterdam became a great transshipping center of goods going to, and coming from, the industrial centers of the Rhine. For its own requirement of food and raw materials the Netherlands is greatly dependent upon the import trade. Its export trade was also very extensive.

The telecommunication system of the Netherlands is modern and well developed. Netherlands is one of the few countries which had an extensive automatic dialling system. The chief cities of the Netherlands have long distance telephone communication with all the chief European centers and direct radio telephone communication was available to the East Indies and the United States before the invasion.

b. Development of natural resources

(1) Agriculture

(a) Introduction

The statistical data for 1940 indicates that the Netherlands has an area of about 8,186,000 acres of which 2,401,000 acres are in cropland, 3,200,000 acres are in permanent pasture, 223,000 acres are in fruit, 639,000 acres are in forest, and 1,723,000 acres in other land. These statistics show that only about 30% of the total land area is used for crop production, but, since 39% is used for live stock pasture, and 3% is planted to fruits, it can be stated that 3/4 of the land area is given over to agricultural enterprises. See Appendix V, Table I for land use in the Netherlands.

Attempts were made, as the result of the blockade of the World War, to increase the production of vital food and feedstuffs. There has been improvement in domestic production by applying new technics and adding areas by reclamation. However, the Netherlands still had to get ½ of its grain requirements and almost 3/4 of its other food requirements from abroad. The accompanying figures for 1937-1939 (average) indicate the degree of self sufficiency which existed in vital food and feedstuffs.

Grain	Acreage 1,000 Acres	Production Per Acre Bushels	Production Total 1,000 Bus.	Net Imports 1,000 Bus.	Total Supply 1,000 Bus.	Degree of Self Sufficiency. %
Wheat	315	43.3	13,654	22,942	36,596	37
Rye	574	37.5	21,505	2,158	23,663	91
Barley	110	57.6	6,335	8,280	14,615	43
Oats	378	76.1	28,754	2,311	31,065	93
Corn	0	0	0	34,526	34,526	0

(b) Crop Production (See AppendixV, Table V for statistics of crop production.)

Of the bread grain consumption, 2/3 is wheat and 1/3 is rye, 63% of the wheat is imported but nearly all of the rye is grown domestically. In combining the statistics of production of wheat and rye Netherlands produced 57% of its needs. Little wheat is used for feed, almost all of it is used for human consumption. Rye is not only used for bread grain, but also extensively for feed. Of the feed-grain need, about 2/3 is imported. The corn supply, making up about 50% of the feed-grain supply, must be entirely imported. Combining the total production of corn, oats and barley, the domestic growth supplies only 34% of the total need. Almost all of the feed-grains come from overseas.

After grain, the most important crop is potatoes. About 1/8 of the cropland is planted to potatoes. Production in 1939 yielded about 120 million bushels, of which about 1/3 was used for starch.

Sugar beets are an important food crop. Not only does the sugar beet crop supply ¾ of the country's sugar requirement in normal times, but also the pulp of the sugar beet is used for feed.

Truck farming in the Netherlands is rather extensive. A great export trade in horticultural products accounts for a great source of national income.

Domestic production of seeds, used in the manufacture of concentrate feed, is unimportant. About 70% of the amount needed must be imported. (See Appendix V, Table IV for details of Agricultural Imports. Average 1936-38.)

(c) Livestock Production

This is the most important aspect of agriculture in the Netherlands. 39% of the area of the Netherlands is in permanent pasture and 30% of the crop land is given over to

crops for feed. However, this highly specialized industry is greatly dependent upon the import and export market. Cattle and dairy production is the chief branch of the livestock industry. (See Appendix V, Table II for the statistics of the live stock in the Netherlands.)

The dairy products account for 1/3 of the value of the agricultural production. 222,000,000 pounds of butter and 277,000,000 pounds of cheese are produced annually, and the total milk production is estimated at 11 billion pounds annually, of which 3/4 is processed into dairy products and ¼ is used for human consumption. About ½ of the dairy products are exported. (See Appendix V, Table III for details of Netherlands production of dairy products.)

Hog production accounts for 1/5 of the value of the agricultural productibn. It too is dependent upon an import market for feed and most of the pork product is exported.

Next in importance are the poultry and eggs products. In value these equal the value of pork products. This industry is also greatly dependent upon the export market.

Since the Netherlands'agricultural economy is so firmly geared to the import and export market any disturbance of this market causes a great disruption at home. The imports of the vital bread-grain and feed-grain have, according to reliable reports, dropped to less than 5% of the normal amount after the invasion. This situation is aggravated by the fact that grain production in 1940 was unusually small. It is not thought possible that the plantings in these crops were increased by more than 10% in 1941. Oats were increased and wheat decreased. Perhaps a grain harvest of about 1½ million tons was secured in 1941.

The potato acreage in 1941 was increased by 25%. Since feed-grain supplies have been cut so drastically

there was a great reduction in cattle numbers and milk production. It is estimated that 40% of the cattle herd has been slaughtered.

It is estimated that butter production in 1942 would be decreased by 2/3 of normal, cheese by at least 1/3, pork production by ½, and egg production by ½. The Dutch government had already attempted to control live stock production and encourage the cultivation of domestic grains to a greater extent. Under the Nazi regime this has been done to a greater degree. Much pasture land is now being turned over to crop land .

(2) Minerals.

The mineral wealth of the Netherlands consists solely of coal and salt. In terms of total production of coal the Netherlands is not a ranking country, and in comparison with neighboring countries the coal deposits in the Netherlands do not seem to be very great. In Belgium 29.7 million tons of coal are mined annually, in France 45.3 million tons, and in Germany 184.5 million tons, while in the Netherlands only 13.4 million tons are mined annually. (Appendix VI, Table III gives a comparison of the size of the German, Belgian and Dutch mines.)

There are only 12 workable coal mines in the Netherlands, all of them being found in a district in southern Limburg in a diagonal line running from the town of Sittard to southeast of Heerlen. Known workable deposits of coal also exist in northern Limburg, North Brabant and in the hinterland of Gelderland. These have not yet been exploited.

The coal mining industry is relatively new in the Netherlands. Production in quantity began only 40 years ago and the principal developments in the mining industry did not take place until after the World War. The result is that the equipment in

the Dutch mines is very modern, the technics employed are advanced, and the labor conditions are extremely favorable. For this reason the Netherlands in its mining industry heads the list of European countries for annual output per miner, highest wages, fewest strikes and best social conditions (see Appendix VI, Table V for a comparison of output per worker in the Netherlands with the output in the neighboring countries).

Under normal conditions the domestic production and consumption were approximately equal. In 1938, which can be taken as a normal year, the production was about 14,321,268 tons and home consumption was about 13,356,995 tons. Not all the coal mined in the Netherlands is used at home; in fact, almost 10 million tons were exported annually and about 9 million tons were imported. The imported coal came principally from Germany and Wales. The Dutch work their mines with extreme caution because of the limited supply. The Limburg region has an estimated 1,000,000,000 tons reserve and the regions mentioned above may have a reserve of 500,000,000 tons. Thus, at the present rate of production, there is a supply for barely 100 years.

There are four state mines and eight private mines in southern Limburg. The state mines are the larger (see the comparison in Appendix VI, Tables I and II). The production of the 4 state mines is about 8½ million tons, or 59% of the total. The private mines produce almost 6 million tons, or 41% of the total. The two state mines, the Emma and Maurits, are enormous mines. The Maurits, the largest in Europe, has produced 10,000 tons a day from one installation of twin shafts. (The annual production of each mine is given in the table in Appendix VI, Table I.) In the two large mines the maximum production and expansion of the underground workings have

already been attained. Any expansion in the old mines depends entirely upon the discovery of new technics in order to make the deposits profitable to work. (Appendix VI, Table IV indicates the depths of shafts in the various mines.)

The great variety of coal mined in such a small district is very unusual. The dry and semi-bituminous collieries, producing principally house-use coal, supply about 51% of the total coal mined, or approximately 7½ million tons. The bituminous collieries, producing chiefly coking and industrial coal, supply 49% of the total, or almost 7 million tons. The bituminous coal is chiefly manufactured into coke. The two large mines, the Emma and Maurits, have together 800 coke ovens. The quality of coke manufactured is very high. In addition to coking there are a whole series of by-product industries associated with the bituminous mines, such as the production of tar, crude tar oils, gas, benzole, etc.

All mining companies operate under a concession from the state. The state mines are operated by a limited liability company in which the state holds practically all of the shares.

(3) Forests

The Netherlands is the poorest in timber land among the continental European countries. Only about 639,000 acres, or 7% of the total area of the Netherlands, is forest land. Most of the timber for domestic needs is imported. The consumption of native timber is approximately 17,657,225 cubic feet, which is just about equal to the new growth. The following statistics indicate that the forest area remains rather constant and has remained thus since 1900:

1900 - 621,746.7 acres	1930 - 627,986.1 acres
1910 - 643,019.9 a "	1937 - 632,733.8 "
1920 - 612,287.6 "	1938 - 639,717.6 "

The slight increase since 1920 is due to a conservation and reforestation program being carried out, especially in the provinces of Drenthe, Gelderland and North Brabant. The distribution of forest area by provinces is given below:

Province	Acres	% of total Area
Groningen	1,944.7	0.32
Friesland	18,243.7	2.02
Drenthe	39,786.2	5.45
Overijssel	55,703.2	6.18
Gelderland	210,327.8	17.30
Utrecht	45,138.4	13.63
N. Holland	19,328.4	2.46
S. Holland	12,905.7	1.90
Zeeland	2,606,9	0.60
N. Brabant	155,909.7	12.21
Limburg	77,822.9	14.98
Netherlands	639,717.6	7.76

It is estimated that approximately half of the forest area is in pine and reforestation is done in pine. Most of the wood cut is used by the industries and somewhat less by the building trades. Mine props, piles and fence rails are the main products of the native timber industry.

(4) Fisheries

A considerable source of income for the Netherlands is the fishing industry. In addition to the industry itself the many subsidiary industries dependent upon it add greatly to the national income. The statistics indicate that in 1938 a total of 226,071 tons of fish were landed, with a total value of $10,771,800. This is a representative figure. The figures for 1939 are considerably lower--188,710 tons, with a total value of $8,460,920. The quantity of sea fish landed during 1939 was 49% smaller than in 1938, while the coast

fisheries during 1939 increased by 14% as compared with the previous year. The fishing fleet in early 1939 numbered 3,308 vessels of all types. The tables in Appendix VII indicate in detail the extent and value of the fishing industry. These figures given above and in the Appendix indicate only the catch landed and brought to the Netherlands. The statistics do not include the amount which Dutch fishermen sold directly in England.

The principal branch of the deep-sea fishing was the drift-net herring fishing, carried on in the North Sea and in the Channel. In 1938 the value of this herring fishing alone was $4,499,828. Herring is one of the chief items on the export list and was a very important food item at home. In 1938 the herring fishing fleet numbered 256 vessels (53 steam-luggers and 203 motor luggers). However, the disturbed political conditions of 1939 disrupted the activities of the fishing fleet immensely. During the last four months of 1939 only 122 vessels engaged in the herring fisheries.

A second branch of the sea fishing is trawl-fishing. By this method some herring are caught but the catch is chiefly other kinds of fish, such as plaice, haddock, and cod. The trawl-fishing fleet of 671 vessels, harbors principally at Ijmuiden.

Sea fisheries formerly constituted the chief branch of the fishing industry but since the war the coast-fisheries and fresh-water fisheries are the only branches of the industry which are worked. Coast-fishing comprises fishing in the territorial waters, estuaries, open harbors, the Ysselmeer, the South Holland and Zeeland streams, the Lauwerzee and the Waddenzee. The total catch in 1939 was 111,223 tons valued at $2,321,930. This figure is representative of the capacity of coast-fisheries. The types of fish

caught and the amounts are given in Appendix VII, Table III.

Fresh-water fisheries, in addition to amateurs, employ a considerable number of professional fishermen. In 1939, 377 tons of fresh-water fish were landed, having a value of $27,090. The types of fish caught are salmon, eel, smelt, and pike.

32. Manufacturing

The Netherlands lacks practically all of the raw materials essential for industry with the exception of coal. In spite of this lack of raw materials, industry ranks foremost in the country's economic life, as far as giving employment is concerned (about 40% of the population is employed in industry). The development of industry is of recent origin, since it was only in this last century that the wealth of the Belgian Campine coal-field, which passes under the southernmost province of Limburg, was exploited.

In spite of the shortage of raw material the Netherlands is compensated by the fact that the country has large quantities of farm produce, and industries based on these account for a substantial part of the export trade. Also, many of the raw materials are supplied by the colonies of the Netherlands, and others are easily secured, owing to the excellent location of the country as regards world traffic. Dutch industry is, therefore, chiefly based upon the import and export market.

The industry of the Netherlands is extremely varied. The chief industries listed in the latest Foreign Commerce Yearbook are the following manufactures:

In order of Value	In order of Number Employed
1. Cotton and linen	1. Cotton and linen
2. Flour	2. Shipbuilding
3. Margarine	3. Machines, cars, etc.
4. Shipbuilding	4. Wool
5. Wool	5. Shoes
6. Machines, cars, etc.	6. Iron and steel foundries and enameling
7. Cocoa and chocolate	7. Cocoa and chocolate
8. Paper	8. Paper

9.	Shoes	9.	Electrical machines and devices
10..	Soap	10.	Steel construction
11.	Leather	11.	Soap making
12.	Iron and steel foundries and enameling	12.	Leather
13.	Electrical machines and devices	13.	Flour
14.	Steel construction	14.	Margarine

The Netherlands has few heavy industries. In the year 1937, which can be taken as normal and representative, the total inland iron and steel supply amounted to 1,089,000 tons, or 275.5 lbs. per capita. (Germany had in the same year 625.9 lbs per capita; Belgium-Luxemburg 696.4 lbs; France 359.2 lbs.; Great Britain 749.3 lbs; United States 914.6 lbs per capita.)

There is only one blast furnace company in the country (Koninklijke Nederlandsche Hoogovens) located at Ijmuiden. The national government with the city of Amsterdam owned 40% of its capital. The total output of pig iron in 1939 was about 248, 150 tons (two of the furnaces worked to capacity and one was held in reserve). According to a 1941 report it is believed that perhaps the three furnaces could each average 400 tons a day. Iron foundries in the Netherlands are small but fairly numerous. (See Appendix VIII for the location and size of these foundries.)

There are only four steel foundries in the country. There is one at Utrecht and another at Ridderkerk. The former, which is the larger, has an estimated daily capacity of 27 tons of ingots for steel forgings, 5.9 tons of castings produced by the electric steel process and 2.9 tons produced by the Siemens-Martin process. The Ridderkerk producer manufactured only steel castings, and, according to the latest data, produced only about 637.9 tons a year. A steel works with one

Siemens-Martin furnace was opened in 1939 at Ijmuiden and a second furnace was planned. No statistics are available for this concern. Another new company at Delft manufactured steel from scrap in a Siemens-Martin oven in 1939. (See Appendix VIII for the number, size in personnel, and location of these iron and steel foundries.)

The iron and steel working firms must therefore be very small. Such firms as can be considered of any consequence are chiefly located in the southern part of the country. (Appendix IX gives the location by city and province, the number and type of iron and steel working firms, and the number of employees. Appendix X gives a more detailed picture of the geographical distribution of the iron and steel working firms.)

There are no great industrial machinery centers according to the United States conception of the term. The manufacturing of machinery, although it ranks among the most important Dutch industries, exists only in many small shops distributed over the country. It is difficult to secure details concerning the various types of machines manufactured since the government statistics bureau gives only two categories: 1. Hoists, lifts, etc., and 2. drive machines, motors, boilers, pumps and appurtenances thereto. (See Appendix XI for statistics of machine production as of 1939.) Production does not take care of domestic need. The imports of machinery in 1939 amounted to $42,414,310. The import amounts to about 2¼ times the export of machinery.

Aircraft factories are not numerous and exact details of capacity and production are not available. The Fokker Aircraft Company at Amsterdam produced most of the aircraft in the country. There is also a small factory of the Fokker plant in Veere, on Walcheren I. The Fokker plant specializes in military and naval planes, in fact, up to 1939, it had not developed a modern commercial transport design. All of the aircraft of the K.L.M., the only

commercial aircraft transport company in Netherlands, were American built planes. Most of the orders of the Netherlands government were given to the Fokker plant and to the plant at Koolhoven, in Rotterdam. These two plants together in 1939 employed 2,500 workers. The Fokker plant had orders in 1939 for 20 pursuit ships for the Netherlands government and 50 pursuit ships were under construction for France.

The Airolanda factory, located at Papendrecht, near Dordrecht, is believed to have been licensed under a leading German firm. It is a small plant which merely assembled aircraft. There is a very small factory at The Hague and one at Flushing, "De Scheldo", which builds small planes for private and instructional use.

In Appendix XII there is a list of the principal establishments in the Netherlands producing or capable of producing war material.

Another industry of military value is the vehicle transport industry, i.e., the production of cars, trucks, busses, motorcycles and bicycles. (See Appendix XIII for a list of companies claiming to be manufacturers of automotive units and for the production figures.) One can not really speak of an automobile industry in the Netherlands. For its automotive equipment the country is almost entirely dependent on imports. The bicycle industry is a flourishing industry however. Imports and exports of bicycles are negligible, the many small workshops being able to supply domestic need. The production of bicycles has been on an increase as the following figures indicate.

Year	Production	Percentual change	Remarks
1937	3,578,000		
1938	3,679,000	2.9	

Year	Production	Percentual change	Remarks
1939	3,959,000	7.8	Increase due to sharp curtailment of automotive traffic.
1940	3,973,000	0.3	Decrease due to invasion Does not indicate decrease in traffic, in fact, traffic increased.

Most of the bicycles are manufactured in small workshops. Only three factories in the country employ more than 200 laborers each, and 25 somewhat smaller factories produce less than $\frac{1}{2}$ of the total output. This industry keeps 2,774 persons employed.

The most important industry of the transport group is shipbuilding. On the world's list of production in shipbuilding the Netherlands occupied third place. The Netherlands' shipbuilding yards have facilities for building large passenger and cargo boats as well as for building tank ships, ocean tugs, ferries, floating bunker machines, submarines, floating cranes and dredging machines (see Appendix XIV, Tables I and II for a list of the important shipbuilding companies and their facilities and capacities for production). The Dutch Central Bureau of Statistics reported, as of November 30, 1939, the annual value of the products of the shipbuilding industry to be $81,885,470. In the preceding years it had been as follows:

Year	Value
1935	$24,230,507
1936	35,811,888
1937	45,935,379

The centers of the shipbuilding industry are in the two chief ports of Amsterdam and Rotterdam, although smaller shipbuilding yards are scattered throughout the country along inland waterways. The yards of Rotterdam and Amsterdam are still important. In April, 1941, at Rotterdam there were building: 1 cruiser, 17 naval sloops, 6 other naval vessels and 12 tank landing craft. The 3 important shipbuilding yards in Rotterdam

which are producing naval craft are:Wilton's, Rotterdam Dry-docks, and Nieuwe Waterweg Shipbuilding Co. On the same date in Amsterdam there were building: 16 sloops, 1 merchant vessel, 12 E or R boats, 2 other vessels and 21 tank landing craft.

The metal industry of the Netherlands is small but rather important. We have already noted the production of pig iron and steel as the basis of the heavy industries. In tin production Netherlands ranked as a world leader. 20% of the world's tin supply came from the Netherlands Indies and the same proportion was smelted in the Netherlands at the two plants at Arnhem. The two companies, which thus controlled 1/5 of the world's tin supply, were Banka and Belliton, which, since the blockade of Europe, have been rendered practically inactive. There is also one nickel refinery, one of the few in the world, with the small annual capacity of 2,000 tons, and a few very small lead and zinc rolling mills at Utrecht, Amsterdam and 's-Hertogenbosch.

The most concentrated industry in the Netherlands is the textile industry, divided, for the main part, into cotton factories, woolen factories, and rayon factories. The cotton industry is concentrated in the district of Twenthe, in eastern Netherlands (Overijssel), near German Westphalia. 3/4 of the total cotton industry is located there. Enschede is the leading mill town, although Almelo, Hengelo, and Goor are also important. This region employed more than 40,000 workers in its cotton factories in 1939. The woolen industry is concentrated in North Brabant. It is not nearly as large as the cotton industry. The rayon industry is found at Arnhem, Ede, Breda, Rotterdam and Nijmegen. This rayon industry furnished about 3% of the total world production in 1939.

The electrical industry of the Netherlands is a rapidly growing industry. It is scattered over southern Netherlands. The great Philips Electrical Works, which accounts for most of the

volume of production of radio and incandescent lamps, is located at Eindhoven. There is also an important radio industry at Hilversum(Nederlandsch Seintoest Fab.)which is now engaged in precision instrument manufacture. According to the latest available statistics (1939) there were 46 factories producing electrical supplies, employing 7,037 workers. This does not include establishments engaged exclusively in the production of radio, telephone, telegraph, wire cable or batteries.

The food industries in their aggregate employ the greatest number of workers and form the principal source of income. It is distributed throughout the country without any concentrations except the potato-flour industry which is confined to the north and the sugar industry to the southwest. There are about 30 flour mills in northern Netherlands. There is also a large one at Wageningen which controls 250 flour-mills and bakeries. An estimate places the number of bakeries throughout the country at 15,000. The rice and barley hulling mills are located along the river Zaan. A very flourishing margarine industry developed at Rotterdam. This industry, like most of the Dutch industries, is dependent upon imports. The cocoa and chocolate works (about 50 of them), for which the Dutch are famous, are found near Amsterdam and Rotterdam. The problem of production of food is likewise treated in section 31 b.

33. Utilities

a. Power Plants

The use of electricity developed very rapidly in the Netherlands. However, the per capita consumption in the country, estimated at 300 kw. hours for 1939, does not appear to be very great when compared with the per capita consumption of 845 kw. hours for 1938 in the United States. The latest official statistics given by the Dutch Central Bureau of Statistics show that in 1937 there were 1,818,347 customers, and a per capita consumption of 299 kw. hours. Since we know that in 1938 there was a 10% increase in power delivered to the transmission lines, the per capita consumption is raised to 300 kw. hours for 1939.

The distribution network covers practically the whole country. Only 7 municipalities, with a population of 14,000 , were not supplied with electric current in 1939. The country is, therefore, 99.8% electrified. (See the accompanying figure indicating the extent of electrification in the Netherlands.)

According to the latest available statistics the high tension underground lines were 11,287.1 miles in length and the above ground lines were 862.3 miles. Distribution of electricity under high tension occurs for the greater part through underground cables. From these lines current is fed through transformers at low tension over 8,388.4 miles of overhead lines and 9,693.3 miles of underground lines. The total transformer capacity of the system (latest available -- Jan. 1, 1938) was 3,002,277 kVA. The statistics for the same year indicate that there were 34 light and power plants, almost all thermal (see Appendix XV), with a capacity of 1,320,831 kw. and a maximum load of 705,105 kw. (See Appendix XV, Table II for the name, location, capacity, consumer voltage, etc. of each station. For details of electric power plant facts, see Appendix XV, Table I).

PROVISIONAL EDITION

RESTRICTED

THE NETHERLANDS

GENERATION AND TRANSMISSION OF ELECTRICAL POWER

GENERATING STATIONS

- UNDER 100 KW
- 101 - 1000 KW
- 1001 - 10,000 KW
- 10,001 - 100,000 KW
- OVER 100,000 KW
- UNKNOWN KW

TRANSMISSION LINES

- 10 KV
- 50 KV

NUMBERED STATIONS

1 DELFT	7 LEEUWARDEN
2 GOUDA	8 GEERTRUIDENBERG
3 ROTTERDAM	9 ST. MARTENSDIJK
4 DORDRECHT	10 TILBURG
5 UTRECHT	11 VEENDAM
6 GRONINGEN	12 EMMA MINE

0 10 20 30 40 50

MILES

NES

HOLLUM

SCHIERMONNIKOOG

TERSCHELLING

VLIELAND

DEN BURG

BEILEN

EMMEN

URK

IJSSEL MEER

ZWOLLE

VELSEN

HAARLEM

AMSTERDAM NORTH
AMSTERDAM SOUTH
211,000 KW

HENGELO

NORTH SEA

LEIDEN

THE HAGUE

ARNHEM

GERMANY

BOXTEL

BARLE - NASSAU

VLISSINGEN

BELGIUM

VENLO

WESLDORPE

THESE SEVEN MINES DISTRIBUTED OVER 1,000,000 KWH TO THE PROVINCE OF LIMBURG IN 1937

HENDRIK MINE
ORANGE - NASSAU MINES (4)
WILHELMINA MINE

MAP NO. 589 JUNE 8, 1942

DRAWN IN GEOGRAPHY DIVISION C.O.I.

Electric power in the Netherlands is generated in municipal and provincial plants. Electrification of large towns and suburbs is left to municipal enterprise, whereas (except South Holland) the rural districts are electrified either directly or indirectly by establishments of the provinces. Most provinces have their own central stations, or obtain the current in bulk from a large station. The system of distribution has been very decentralized. Electric current is delivered ordinarily only within the area of the city or province which controls the distribution of that area. Frequently small cities and towns only a few miles apart have their own generating plants and systems of distribution, e.g., Haarlem, about 12 miles from Amsterdam, is not supplied by Amsterdam but has its own power plant, while the province of N. Holland, in which both cities are located, has a plant at Velzen, near Amsterdam and Haarlem. This makes for waste and costly production. Suggestions have been made to centralize the system by establishing connecting lines; but since these lines were to be underground, the expense involved seemed to be prohibitive. Connecting lines have been established in some cases linking up electric power plants, and superfluous ones are being eliminated. There is no evidence available concerning the extent to which the projected plan of connecting the chief power lines has materialized.

Current supplied at consumers' light terminals in the Netherlands is in general the 220 volt 50 cycle type, and power terminals usually deliver a 380 volt alternating current. However, there are exceptions to this rule. (Consult Appendix XV, Table II.) In 1939 the total energy generated was 2,635,000,000 kw. hrs. The distribution of use of electric current can be fairly well gauged from the following statistics:

8.4% for traction

1.6% for drainage pumps

44.0% for industries

32.0% for domestic and household purposes

2.8% for public lighting

10.0% miscellaneous and losses.

In addition to the municipal and provincial electric power establishments, all the mines generate a great deal of electric energy for their own use; and in the case of the State, Oranje-Nassau and Julia mines, electric power is also generated for distribution. The State and Orange Nassau mines sell superfluous electricity to the Limburg Provincial Electric Company. This thermal generating station at Lutterade supplies the two large state mines, the Mauritz and Emma, and three synthetic ammonia plants, plus the domestic requirements for northern Limburg. It is believed that the Lutterade station was also feeding into the R.W.E. grid. Recently (reported, April 23, 1942) an accident occurred which cut off this vital supply. The Julia mine also distributed power locally but only to a limited extent.

b. Ice Making and Cold Storage Plants

The last comprehensive survey of ice making and cold storage plants in the Netherlands was made in 1923. No suitable and satisfactory material of a more recent date has become available. The survey of 1923 indicated that the Netherlands possessed modern and adequate installations. In 1923 no extension of these facilities was even contemplated. Therefore, the material given in Appendix XVI, although relatively old, is still very useful. Climatic conditions would not promote progress in this field. The average temperature in July, the warmest month of the year, is about 65° Fahrenheit, while the maximum seldom exceeds 85 degrees. Cooling cellars satisfy, to a great extent, the requirements for cold storage. Local custom likewise keeps down progress in this field. Cold foods and drinks are not very popular, drinking

water is not generally iced.

The existing facilities are established in relation to the needs of storing perishable goods at the ports and in connection with meat packing houses.

c. Water Supply

According to the latest available statistics (1939), there are approximately 1,056 communities in the Netherlands. Of these, 70 had a population of more than 10,000. These 70 cities, plus 688 of the 986 rural communities, had a central water supply system. The total number of inhabitants served from a central water distributing system was about 7.3 million, or about 85% of the population. The accompanying figure indicates the water supply system of 1933, when 625 communities, with a population of 6.5 million, or 80% of the total, were supplied from a central system. Between 1933 and 1939, the extension in the distributing system was principally to the rural areas.

Province	Pop.1933	No. of citieswith cent. water supply	No.of inhab. in these prov. served by a central supply system	
			In Total	In %
S. Holland	2,016,613	138	1,948,214	99.6
N. Holland	1,561,896	123	1,548,819	99.16
Utrecht	424,653	47	384,343	90.5
Over.	535,572	46	474,379	88.57
Limb.	577,243	65	441,150	76.4
Fries.	406,126	28	297,964	73.36
Gron.	400,190	46	253,723	63.39
Noordbrabant	924,039	48	536,215	58.
Zeeland	249,515	54	138,424	55.46
Gelderland	858,314	23	446,505	52.
Drenthe	229,171	7	61,001	26.6

At the beginning of 1938 there were altogether 215 water supply undertakings in the Netherlands. Only a small percentage of these were private companies. Each of the large towns has its own supply system,-e.g., Amsterdam, The Hague, Rotterdam, and Groningen. However, in Utrecht, Arnhem, Tilburg, and Leiden the water supply is owned by private establishments.

The potable water supply in the Netherlands is largely drawn from ground water, very few communities having utilized

PROVISIONAL EDITION

FREE

CENTRAL WATER SUPPLY SYSTEMS IN THE NETHERLANDS 1933

NORTH SEA

ZUIDER ZEE DIKE

IJSSEL MEER

BELGIUM

GERMANY

GRONINGEN
ASSEN
SNEEK
DEN HELDER
MEPPEL
HOOSEVEN
COEVOERDEN
KAMPEN
ZWOLLE
ALMELO
HENGELO
ENSCHEDE
DEVENTER
HAARLEM
AMSTERDAM
LEIDEN
'S-GRAVENHAGE
HOOK OF HOLLAND
AMERSFOORT
UTRECHT
DOORN
ARNHEM
WAGENINGEN
ZUTPHEN
WINTERSWIJK
ZEVENAAR
TIEL
NIJMEGEN
S-HERTOGENBOSCH
BREDA
TILBURG
ROOSENDAL
MIDDLEBURG
HELMOND
EINDHOVEN
VENLO
WEERT
ROERMOND
SITTARD
ZUID-LIMBURG
HEERLEN
KERKRADE
MAASTRICHT
VAALS

● CITIES HAVING CENTRAL WATER SUPPLY SYSTEMS

A (A-Initial letter of city name)

REGIONAL CENTRAL WATER SUPPLY SYSTEMS

PROVINCE BOUNDARIES

0 10 20 30 40 50

MILES

MAP NO. 699, JULY 24, 1942

DRAWN IN THE GEOGRAPHY DIVISION, O. S. S.

river water. The geohydrological conditions of the Netherlands present several great problems in getting a suitable fresh water supply. This is especially true in the low-lying western area, where underlying strata of salt and brackish water interfere with getting at the fresh water supply. Many communities utilize the ground water of the dunes, where the rain water percolates through and the stratum of salt water is gradually replaced by fresh water. A lens-shaped pocket of fresh water above the salt and brackish water is thus formed. These supplies of fresh water are limited and must be used very economically.

In eastern Netherlands, where pleistocene sand and gravel are protected by a layer of clay, the ground water supply is of excellent quality. In Utrecht and Arnhem the water is distributed without any previous treatment.

In southern Limburg water is often drawn from chalk formations (Heerlen), while towns along the river Maas (Maastricht, Sittard, Roermond, Venlo) utilize pleistocene sand and gravel terraces which usually carry an abundance of water.

Since the ground water supply is of a very limited amount, especially the dune supply, other sources must be exploited. Amsterdam had worked to the maximum capacity the supply from dunes at Leiduin, near Hilversum, as well as a canal water station at Weesperkarspel; and it had to turn to the lake at Loenerveen, which is supplemented by water pumped from the Bethune polder and from the Rhine. So too The Hague, which had been using dune water exclusively, had to fall back on river water. River water had not been used extensively because of the taste problem, thought to be caused by the drainage from the Ruhr industrial area. Only recently has a method been discovered to overcome this problem.

Various regional water supply projects have materialized. The largest project is that of the province of North Holland which has a network of 1,555 miles, serving 106 communities having a population of 500,000 persons and having 104,000 connections. Its supply is drawn from ground water although projects are being considered to use the fresh water supply of Ijssel Meer. The annual output of potable water in the province of North Holland is 490 million cubic ft.

The per capita consumption is low when compared to that of the U.S. In 1928 (date of the latest available figure), it amounted to 25.1 gallons per day. This can be explained by the fact that many of the industrial establishments have their own sources of supply.

The section dealing with Public Health gives further details for the potable water supply. The material given in Appendix XVII, although comparatively old, is the latest available and still useful.

d. Gas Supply

The Netherlands does not possess a natural gas supply. Its gas supply consists almost entirely of manufactured coal gas or coal gas mixed with water gas.

On January 1, 1938 there were in the Netherlands 199 gas distributing stations. Of this number 33 stations bought gas in bulk and redistributed it to the area it supplied. Thus there were 166 gas works which manufactured gas. The number of stations varies very slightly from year to year. In 1936 there were 207 gas stations, of which 43 bought in bulk; in 1937 there were 208, of which 46 bought in bulk. See Appendix XVIII for a list of these stations, annual production and the number of customers.

Almost all of the gas works establishments are municipally owned. There were in 1937-38 only 22 companies not owned by municipalities. These private companies are all relatively

small. Complete statistics for these private companies are not available but it seems that the establishment in Gorinchem is the largest, with an annual production of 56 million cubic feet, about 3,000 customers, and 15 miles of mains.

The total production of gas in 1938 (year of the latest data available) was 23,016 million cubic feet, of which 1,341 million cubic feet were produced by water gas installations. In the area supplied with gas, the production amounted to 3,636 cubic feet per capita. Altogether there were 1,250,000 meters, with an estimated service to 71% of the population, i.e., about 6,103,000 persons were served.

The coke ovens of the state mines are very important producers of gas. The Emma and Maurits mines have between them 800 coke ovens. The gases from these coke ovens alone normally average 35,317 million cubic feet a year. The coke ovens and other subsidiary establishments use a good share of this gas for heating purposes; but the remaining 15,000 million cubic feet (estimated as being more than the production of all municipal gas works in the Netherlands) are distributed over the province of Limburg and a part of North Brabant. There are 17 distributing stations in these provinces which buy gas in bulk from the state mines. The cities of Eindhoven, where the important Philips Electrical Works is an important consumer, 's-Hertogenbosch, and Maastricht, where the ceramic industry is an important user, are supplied from the installations at the state mines. (It was reported, Jan. 1, 1942, that at Eindhoven the gas storage depot had exploded, and had completely disappeared.) The blast furnace establishment at Ijmuiden is also a fairly important producer. It supplies the needs of four small municipalities.

Among the municipalities, the most important gas manufacturing establishments are located as follows:

Amsterdam	3,484	million	cubic	feet	annually
The Hague	2,602	"	"	"	"
Rotterdam	2,824	"	"	"	"

All other concerns are very much smaller.

The gas manufacturing industry is not a growing industry in the Netherlands. The restrictions placed upon the industry during the World War, because of scarcity of coal, gave it a set back from which it only gradually recovered. Not until 1937 and 1938 did the principal gas manufacturing establishments show any gains. The extension of mains is somewhat commensurate with increased needs of an increased population. In 1936, there were 6,279 miles of mains, and in 1937, 6,406 miles.

Since German occupation, domestic consumption of gas has been cut down to a minimum. The use of gas for cooking and heating has been curtailed severely between the hours of 3 - 5 P M and 9 P M to 6 A M. This went into effect Feb 8, 1942 and applied to the entire country. Hence, gas supplies everywhere must be very low.

e. Sanitary Installations

Material on sanitary installations can be found in paragraph 22, dealing with Public Health. As a supplement to this material the following details are given.

With the increasing demands for the development of water supplies, the problem of sewage disposal has increased. In 1910, a public board was established, concerned chiefly with industrial wastes; but after 1920 a board was established to supervise the whole field of sewage disposal. Much experimentation in this field has been carried on and the installations which have been built have established entirely new workable methods. Thus, since 1920 the sanitary condition of the basin of the river Berkel was improved by the construction of five sewage works. New plants

treating sewage and industrial wastes have been constructed at Hilversum, Tilburg, Leiden, and in the basin of the river Regge. Most of the sewage waste of Amsterdam is still discharged into the Ijssel Meer; but this can not continue for long, since the Ijssel Meer is expected to be used as a source for potable water supply. The plants erected at Hilversum, Bussum, and Vught have proved successful in applying new and revolutionary methods. The Hilversum plant is designed for a population of 40,000, with a connected population of 36,000. The plants at Vught and Bussum are much smaller, the former, an entirely automatic plant, is designed for an ultimate population of 25,000, and the latter for a population of 10,000.

34. Netherlands Railroads

a. General

The railway system of the Netherlands is much smaller in size and capacity than the Belgian system. The Netherlands has a total network of 17.3 miles per 100 square miles while Belgium has 51.2 miles per 100 square miles. Freight transport in the Netherlands relies chiefly upon canals. Statistics indicate that about 52.5% of the inland freight was hauled over the waterways, whereas the railways accounted for only 15% and motor transport accounted for 32.5%. The Dutch railway system is essentially a passenger traffic system; but, even in this field, it is not the leader. According to the latest estimate (1938), 65,000,000 passengers were carried by interurban bus lines, while during the same period 47,117,012 were carried by the railways.

Owing to the competition of canal and motor traffic, the railways had not flourished in the past few decades. Small communities were far more accessible by bus, since railways were constructed in straight lines between large cities. The result was that many branch railway lines were closed to all traffic, that others were designated as freight routes only, and that many of the intermediate stations were made freight stations only, or closed entirely,

In order to revive the passenger-carrying traffic, electrification of main lines had been begun. At the outbreak of the war, the Netherlands had 2,278.4 miles of lines in operation, of which 327 miles had been electrified. (Appendix XX designates electrified lines, as does the accompanying map.) Electrification is planned for all lines which carry passenger traffic. Power is supplied by provincial and city power stations, transformed at sub-stations into direct current, 1,500 v.

b. Equipment

Of the total of 2,278.4 miles of lines, 1,047.6 miles were in double track, serving both passenger and freight traffic; 8.6 miles consisted of double track serving freight traffic only; 1,012.2 miles were in single track serving passenger and freight traffic, and there were 210 miles of single track serving freight traffic only. The gauge is 4'8½", which is standard for most European heavy railway lines, except those of the Soviet Union and Finland.

The rolling stock as of May, 1940 was constituted as follows: 1,063 locomotives, of which 901 were steam, 108 Diesel-electric, and 54 gasoline.

1,790 passenger coaches for steam traction, seating 98,000 persons.

161 passenger coaches for electric traction.

155 postal cars.

1,359 baggage cars.

197 motor railcars.

153 electric railcars.

44 internal combustion railcars.

138 self-propelled train sets, of which 61 were electric two-car units, 37 were electric three-car units and 40 were three-car units.

27, 279 freight cars. Most of them were of the small 2 axle type varying in capacity from 2.9 tons to 19.6 tons. Of these, 11,642 were closed freight cars and 15,637 were open freight cars.

1,444 privately owned freight cars.

1,139 service and ballast cars.

All passenger and freight cars are fitted with Kunze-Knorr brakes. Screw couplings and ordinary buffers are fitted to all steam traction stock, as well as to the older stock of electric traction. The latest electric traction stock has automatic central couplers.

In addition to the standard railway system, there are light railways and tramways in operation, most of which are of narrow gauges, although some are in standard gauge laid with light track. They are of importance only for some local traffic. Many of the light and narrow gauge lines have been closed. Approximately 750 miles of this type of track may still have been in use at the time of the invasion.

According to a fairly reliable source, the Dutch lost ½ of their rolling stock to the Germans. It is reported that the Germans did not take the Diesel-electric locomotives, but that the steam locomotive stock was reduced by 50%. Reports place the loss of freight cars at 13,500.

c. Management

In order to save the railroads in the unequal struggle against competition with canal and motor transport service, the government in 1937 virtually took over the railroads. It created a limited liability company (N.V. Nederlandsche Spoorwegen) which took over the operation of all the railroads, old companies being liquidated. The state holds practically all of the shares. The state centralized railroad operation to a high degree by abolishing all operating districts. Control was centered at Utrecht; hence a trained local staff experienced in railroad management does not exist.

d. Speed and signalling

Electric trains are capable of developing a speed of 88 miles per hour, while steam traction trains are capable of developing 62 miles anhour. The curvature, gradients, and general condition of the track could maintain higher speeds.

There are only 2 short sections with color-light signals--outside The Hague station and between Gouda and Oudewater. Semaphore signalling is standard.

e. Maintenance

The track in normal times was in very excellent condition. On most lines, especially in Zeeland, South and North Holland, Friesland, and Groningen, there are numerous small bridges and culverts crossing canals, rivers, and drain outlets. These are kept in excellent repair.

The repair of rolling stock is done in shops maintained by the railroad. No new stock is built in these shops. There are four principal repair shops employing a total of 3,400 persons. New stock is built at four private shops, the largest of which has a maximum weekly output of 100 cars.

The repair shops maintained by the railroads are as follows:

1. Haarlem: repairs of electric rolling stock, railcars, diesel stock and steam traction coach stock. The locomotive repair department has been removed to Tilburg.

2. Tilburg: repairs of locomotives only; all other departments have been removed to other shops.

3. Utrecht: repairs of steam traction coach stock mainly. This shop was scheduled for closure, but it was still in full operation in 1939.

4. Zwolle: repairs of steam locomotives and coaches. This, the smallest of the shops, was actually closed in 1939; but no plant or equipment had been removed by the end of the year, and it may have been temporarily reopened during 1940.

5. Amersfoort: repairs to freight rolling stock only. A modern and very active shop.

6. Blerik: repairs of freight rolling stock, mainly coal cars, it is a smaller shop than Amersfoort but well equipped.

The principal private shops which build new stock are located as follows:

1. Worksport, at Zuilen, alongside Utrecht-Amsterdam main line, for all freight stock.

2. Workspoor, at Amsterdam, in the city, close to Dyksgracht freight station, locomotives.

3. Beynes, at Haarlem, opposite the passenger station, coaches only.

4. Allan, at Hillegersberg, alongside the Schiedam-Gouda by-pass line around Rotterdam, smaller shops for coaches.

f. Capacity

A complete discussion of the factors governing the capacity of the main lines as well as a table of capacity measured in the number of trains is given in Appendix XIX.

NOTE: The plan of the recently completed Zuiderzee Dam also included facilities for a double-track railroad. The most conservative report on progress of this railroad reveals that by August, 1940 it was very far advanced. However, another fairly reliable source stated in August, 1940, with positiveness, that the railroad had been almost completed. High ranking Dutch officials who left the Netherlands in May, 1940 were not aware of its construction; hence, if the reports are true, the tracks were placed by the German occupying forces.

g. Critical Points

In the Dutch railway system the bridges crossing the main inland waterways represent the most vulnerable locations. There are only 3 railway bridges crossing the Waal: (from west to east) Moerdijk (total length 5,000 ft.); on the line from Rotterdam and Dordrecht to Roosendaal and Breda, at Zalt Bommel (2,900 ft. long); and on the line from Utrecht to 's Hertogenbosch and Nijmegen (1,5000ft. long).

The port of Flushing at the mouth of the Scheldo could be isolated as far as rail is concerned, through the destruction of the swing bridge over the Arne, or the lift bridge, carrying both a main road and a double track railroad, over the South-Beveland Canal.

Three vital railroad bridges to Rotterdam are as follows:

Over the Maas, north of Dordrecht.

Over the Gouwe, west of Gouda.

Over the Oude Rijn, south of Leiden.

Several vital railroad bridges to Amsterdam are as follows:

Over the Muidervaart Canal.

Over the Gein River, between Nieuwersluis and Amsterdam.

Several important bridges within the Amsterdam area.

h. Freight yards

The Netherlands does not possess many large freight yards; for the distribution area is small. The most important yards are at the ports of Amsterdam and Rotterdam and at Amersfoort, Groningen, and Süsteren. The largest yards at Amsterdam and Rotterdam move about 500-600 freight cars per day, and the maximum capacity possible is 1000.

LIST OF FREIGHT YARDS AND CAPACITY

Place	No. Tracks	Capacity of Cars
Amsterdam		
Watergraafsmeer	50	3,000
Rietlanden	30	1,500
Rotterdam		
Ysselmonde	45	2,800
Feyenoord	10	800
Rechtermaasoever	20	1,000
Utrecht	20	1,200
Amersfoort	40	2,400
Arnhem	15	1,000
Elst	20	1,000
Nymegen	15	1,000
Zwolle	15	800
Groningen	40	2,500
's-Hertogenbosch	15	800
Rosendaal	20	1,200
Baarle Nassau		
Dutch Yard	15	800
Belgian Yard	15	800

Eindhoven	15	1,000
Susteren	30	1,800
Winterswyk	15	700

Other smaller yards are found at Almelo, Hengelo, Leeuwarden, Deventer, Lage-Zwaluwe, Venlo, Roermond, Maastricth, Boxtel, Sittard, and Heerlen.

i. Light Railroad Lines

The light railroad system is merely of local importance and not, as in the case of Belgium, vital to the national system. A part of the light railway system can be used for limited freight traffic if it is hauled by the light engine.

The light railway system of Friesland, Groningen, and Drenthe is fairly considerable. It is significant for local traffic. The islands of Zeeland and South Holland are not served by main lines. These areas have a narrow gauge (3'6") light railway system, interconnected by ferry service and having a terminus with the Ysselmonde frieght yards. The province of Gelderland has an extensive narrow gauge (2'6") system good for freight only. Many of the light railway lines in the Netherlands are being abandoned and replaced by bus and truck lines.

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Railroads of the Netherlands

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35. Roads

Next to Belgium, the Netherlands is the most thickly populated country in the world. Since there are no really great cities, the population of the Netherlands is rather evenly distributed. The four largest cities--Amsterdam, The Hague, Rotterdam, and Utrecht - together have a population 2,000,000; and by electric train, these towns are about an hour apart. There is a similar distribution of population in smaller towns and villages. Under such conditions, a good road system is necessary. To facilitate communication, the Netherlands had developed by 1940 approximately 16,000 miles of roads, 4,800 miles of navigable rivers and canals, and 2,000 miles of railroads.

Owing to the cheapness and completeness of canal transportation, road building lagged until a rather recent road-building program was adopted. This program was adopted to relieve unemployment in the thirties. Roads were roughly classified into primary, or national, secondary, or provincial, and tertiary, or municipal and rural roads. Main government highways were directly under the supervision of the Public Works Department; and its approval was necessary to construct the secondary roads. The ten-year program adopted called for $100,000,000 for primary roads. Most of these were already in existence; but they were to be widened, resurfaced, and renewed. Some important new stretches were also constructed, such as The Hague-Utrecht, The Hague-Amsterdam, The Hague-Rotterdam, and Utrecht-Amsterdam. Other sections must still be built. The result of the program was that most of the national highways were modern and in good repair at the time of the German invasion, May, 1940. (See map for extent of the national and provincial roads.)

National highways are constructed of concrete, on a pattern for either four way or two way traffic, capable of bearing the heaviest military loads. A standard width was adopted of 10 ft.

for each traffic lane. The roads are composed of long slabs of concrete, with tarring between, and an additional strip 1 3/4 ft. wide of cheaper surface on the sides of each roadway. Frequently there is a cycle track of brick or concrete either 6½ or 8½ ft. wide separated from the main road by a grass verge 5 to 25 ft. wide. In the case of super highways of 4 way traffic, the two roadways are separated by a 20 ft. grass verge.

Provincial roads connecting urban centers are surfaced in concrete or asphalt, although there are many such roads surfaced in brick. The width of these roads varies from 20-35 ft., not including the grass verge on either side. The secondary roads are most numerous. They have been greatly improved in the last years. They are suitable for all types of military traffic, although many of them could not bear such traffic continuously.

The tertiary roads are widespread. When connecting villages and farms, they are usually of brick or cobble stone, though sometimes of macadam. They vary in width from 10-20 ft. They are not as a rule suitable for continuous military traffic.

Road building over polder land is difficult, since the soil is underlaid with highly unstable material. Hence, in polder country, roads are embanked, or follow dikes. In such sections, the land is intersected with waterways and with many bridges which could easily be destroyed. Since deployment is difficult because of ditches, of embankments, and of marshy land which flank these roads, such roads could be easily made unsuitable for military movement. This does not hold for the sandy areas in the northern and eastern areas, nor for the sandy coastal area. In Appendix XXI a detailed description of the important roads in the western, southern, and southeastern part of the Netherlands is given. Notice that the road pattern in western Netherlands, north of Rotterdam, is a main coastal road from Den Helder, from which branch roads run inland to Amsterdam, Utrecht, and Rotterdam. In southern Netherlands, the main highways

radiate from the cities of Utrecht and Rotterdam to the Belgian border and Limburg. Several important transverse roads run from Breda to eastern Netherlands. Frequently the road system is duplicated by the railroad system in both western and southern Netherlands.

For road construction brick is the favorite material because it can be produced locally. Asphalt is also very popular, even though there are no local deposits of asphalt and there is no local production of crude oil. At Rotterdam, however, there are refineries for refining these imported products. Cement concrete has been third in importance, but is is becoming increasingly popular. Cement can be produced locally, but most of it is imported from Germany and Belgium. Plain stone was used to surface many of the older roads, but no new stretches have been constructed of it. The following statistics give a general idea of the type of road surfacing for national highways, which reflects the status as of the beginning of 1940:

Type of Pavement	Length in Miles
Asphalt	585.95
Cobble Stone	56.54
Cement Concrete	219.34
Brick	532.51
Broken Stone	2.48
Wood block	1.24
Miscellaneous surfacing	19.88
TOTAL	1,417.94

The total length of primary roads in 1940							1,417.94	miles
"	"	"	"	secondary	"	"	"	2,752.65 "
"	"	"	"	other	"	"	"	11,184.66 "
						TOTAL		15,355.25

The expenses of the national government for its 1939 road building program were as follows:

Construction and improvement of roads	$10,912,700.00
Building of bridges	3,812,820.00
Maintenance	927,000.00
	$15,653,020.00

Much attention is paid to bicycle paths in the Netherlands. Many of these paths running along the canals and roadways have been resurfaced with an asphalt or concrete surface. They could be used for limited motorcycle traffic. Bicycle traffic had always been on an increase even in normal times; and it may be taken for granted that under present conditions it has increased even more rapidly. The total number of bicycles on which a tax had been paid 1938/1939 was 3,729,880, or approximately 1 bicycle to 3 inhabitants.

Vehicular traffic on Dutch highways is rather considerable. Statistics for bus traffic are not very reliable; for the State did not exercise rigid control over bus lines. Many "pirate" lines operated at greatly reduced fares and adapted their schedules and routes to suit immediate conditions. These are not usually considered in the official statistics. The latest figures given by the Dutch Central Bureau of Statistics, January 1, 1939, for bus lines registered under a concession are as follows:

No. of Passengers Carried on daily runs	No. of Passengers Carried on special runs	Total No. Carried	No. of bus lines	Total No. of Busse
67,242,243	379,288	67,621,531	872	4,088

(Total for year)

Some estimate of the capacity for vehicular motor traffic on Dutch highways can be formed from the number of registered motor vehicles in operation as of August 1, 1938.

Motorcycles	3 Wheeled motor vehicles	Passenger Cars	Busses	Trucks	Total
41,954	3,391	88,293	3,794	47,160	184,592

Later official figures are not available. To what extent the German invasion has disrupted vehicular traffic can only be roughly estimated. The following estimate is drawn from a reliable source:

	May, 1940	Jan. 1, 1941
Passenger cars (gasoline) including private, government, public and all four-wheeled cycle cars.	101,700	5,000
Busses (gasoline), including all public conveyances seating 8 or more passengers.	3,760	376
Busses (Diesel). All run on producer gas now.	1,270	127
Trucks (gasoline), including automotive firefighting apparatus, sprinklers, street cleaners, etc.	55,650	5,565
Trucks (Diesel).	2,050	205
Trailers, including semi-trailers.	11,900	unknown
Motorcycles and three-wheeled vehicles.	65,125	"

This is an estimate of the number of vehicles in use. The lack of gasoline accounts to some extent for the severe cut in vehicular use, but requisition by German authorities accounts for most of it.

Even the German officials in the Netherlands are using less motor transport. The few cars which are still used are mostly gas driven.

The Bataafsche Petroleum Co., north of the Ij, which was almost completely destroyed by the Dutch during the invasion, is now producing high and low pressure valves used in the conversion equipment fitted to automobiles. There are 3 plants in Amsterdam which manufacture compressed coal gas.(Gas is compressed into cylinders for attachment to cars.) The first is at the Bilderdijkkade municipal depot, used for refuelling all the official cars. This plant is equipped with 3 compressors. The second plant is at the Municipal Depot on the Ringvaart, on the edge of the canal immediately to the southwest of the gas storage tanks.

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This plant has 2 compressors. The third is a small one located in a garage on the eastern side of the Scheldeplein.

Along with the requisition of vehicles, there was a commensurate requisition of replacement parts and garage equipment. This makes any estimate of existing garage facilities entirely unreliable.

36. Shipping

a. The Merchant Marine of the Netherlands

The geographical position of the Netherlands made it natural that vessels of the Dutch merchant marine should become carriers of world traffic. In relation to population, the total tonnage of the Netherlands merchant navy was only exceeded by that of Great Britain and Norway. In absolute figures, the Netherlands had the seventh largest merchant marine, being surpassed only by Great Britain, U.S.A., Japan, Norway, Germany, and Italy.

The world depression of the thirties hit Dutch shipping particularly hard; so that there were more ships broken up or sold in the Netherlands than in any other country. The number of units as of 1931 (926) was not again surpassed until 1938. The Dutch merchant marine consisted of the following vessels on January 1, 1940:

Types of Ships	Units	Tonnage net
Passenger 44 Transports 221 Tankers 10 Tugs 39		
Steamers	304	754,191.8
Passenger 40 Transports 434 Tankers 73 Tugs 9		
Motor Ships	556	755,037.5
Motor Sailing Ships	97	8,565.8
Sailing Ships	2	178.
Transports 2 Tankers 2		
Barges	4	3,497.4
Contractors' Materials	29	8,421.4
Total	492	1,530,007

The percentage of old ships, i.e., ships more than twenty years old, was very small. The Dutch merchant marine always was in pace with modern developments. The 200 shipyards

of the Netherlands, among the best in the world, were generally recognized as having for many years reached a high state of efficiency and specialization in ship building and repair. For further details on ship building see paragraph 32-Manufacturing and Industry - and Appendix XIV, Tables I and II.

From the outbreak of the war between Great Britain and Germany until May, 1940, 30 ocean-going ships under the flag of the Netherlands, representing 90,231 gross registered tons, or 3.03% of the total tonnage registered July 1, 1939, were lost. Estimates as to loss since then are not available, but it is known that the percentage of loss is very high. At the time of the invasion, the important vessels lost in home ports were as follows: The Statendam, a passenger steamer of 28,291 gross registered tons, the second largest in the Dutch merchant marine; a freighter of 6,872 gross registered tons; and the Jan Pieterzoon Coen, a passenger steamer of 11,140 gross registered tons. In addition, many river and canal vessels were damaged, and hundreds of small river vessels sunk.

At the time of the invasion of the Netherlands, most of the Dutch owned boats were not in home ports. After May, 1940 Dutch ships operated under the Dutch flag, especially from English ports. On June 6, 1942, all ships under the Dutch flag were requisitioned for the U.S. and Great Britain. They will be held under charter to the British War Transport Ministry until six months after the war. This order affected only 1,500,000 tons, since 1,250,000 tons had already been operated by the U.S. and Great Britain since last March.

b. Port Use in Trade Immediately Preceding the Invasion

The accompanying table, which gives the percentage relation of the several ports to the total volume of normal trade in 1939, indicates the relative importance of each port:

Amsterdam

By Sea 6.10%
By river and canal 2.31%

Rotterdam

By sea 38.34%
By river and canal 27.53%

Zaandam 9.43%
Terneuzen 1.22%
Vlaardingen 5.32%
Delfzijl 0.60%
Harlingen 0.30%
Dordrecht 1.28%
Ijmuiden 1.64%
Schiedam 0.43%
Zwijndrecht 0.18%

(1) Rotterdam

The table above indicates that almost 65% of the total tonnage in the Netherlands in 1939 moved in the port of Rotterdam. In terms of number of vessels, statistics show that 52.12% of all the vessels entering Dutch ports entered at Rotterdam. Rotterdam is one of the greatest ports of continental Europe. When combined with all of the ports along the New Waterway, of which Rotterdam is the center, it easily ranks as the greatest north continental port. The following comparison indicates its importance:

	Antwerp		Hamburg	
	Number of Vessels Entering	Tonnage Gross Registered	Number of Vessels Entering	Tonnage
1939	9,524	15,888,710	---	-----
1938	11,762	19,798,658	18,149	20,567,311
	New Waterway		Rotterdam	
1939	13,469	21,697,566	12,026	19,392,128
1938	17,269	27,807,541	15,366	24,744,472

The Rotterdam share of the New Waterway traffic is about 89%. Of the total of more than 100,000,000 tons of sea traffic handled annually in 8 leading northern seaports-- Hamburg, Bremen, Emden, Amsterdam, Rotterdam, Antwerp, Ghent, Dunkirk - about 1/3 passed through Rotterdam and the smaller ports along the New Waterway. The other ports included in the New Waterway (all in the Rhine-Maas delta) are as follows: Hook of Holland, Poortershaven, Maassluis, Vlaardingen, Schiedam, Rotterdam, and Dordrecht.

Rotterdam, a city of 619,686 inhabitants, is situated on the combined estuary of the river Maas and the Rhine,

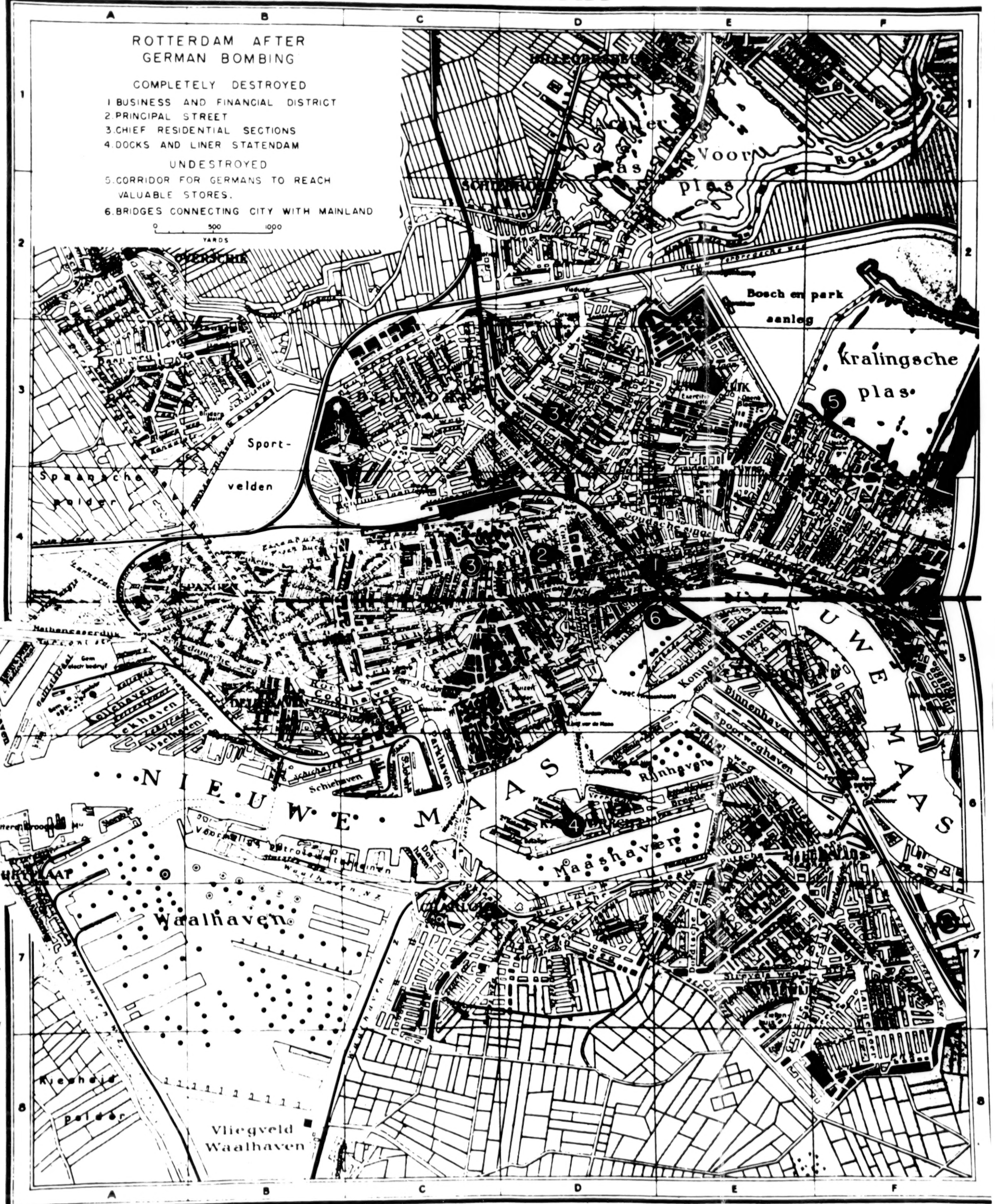
some 18 miles from the sea. The New Waterway, a canal connecting Rotterdam directly with the North Sea, permits ocean-going vessels to reach Rotterdam in about 2 hours without passing locks or bridges. This New Waterway is 33 feet deep at low tide and 38 feet deep at high tide.

The port of Rotterdam is a large, open, artificial ocean and river port. It consists of a series of harbors and tidal basins which are all in open connection with the Maas River. There are no locks, flood-doors, or bridges to impede the progress of ocean-going vessels. The total area for ocean-going vessels is about 1,300 acres. For purposes of description, one may divide the port into two sections, -- the right or north bank and the left or south bank of the Maas. On the north bank there are 7 basins for sea-going vessels. The left, or south, bank is more important, with its 12 basins and a total water area for ocean-going vessels of 1,113 acres. (See the figure showing the port and town of Rotterdam.) The harbors have a low water depth of from 20 to 33 feet, except the Keile Haven, which has a depth of 13 feet. (See Appendix XXII for the details of width, length, depth and the length of quayage of all the harbors.)

In addition, there are 22 basins, with a total water area of 156 acres, for inland craft. 20 of these are located on the north, or right bank, and 2 on the south, or left bank. The depth of water ranges from 6.5 feet to 13 feet. (See Appendix XXII for the quayage and depth of water of these harbors.)

In addition to these harbors, there are quaywalls which serve as mooring places. (See Appendix XXII.) These mooring facilities are supplemented by over 12 miles of moorage at 156 buoys and 62 dolphins giving berthing space to 127 vessels. They are located as follows:

ROTTERDAM



647-G.D.S.S.

156 buoys berthing 78 vessels (15)in river
(63)in Waalhaven
62 dolphins berthing 49 vessels (12) Rijnhaven
(1)at Second Katendrechthaven
(17)at Maashaven
(19)at Waalhaven

All quays are connected to the railway system.

For bulk cargo Rotterdam is the greatest port on the continent. It is the chief inlet and outlet for bulk cargo destined for the industrial districts of the Rhine, and it is the chief outlet for finished products. Rotterdam is also important as a general cargo port, but in this type of cargo it is not as important as Amsterdam. As a transshipping center Rotterdam is of great importance. More than half of the overseas imports and exports of the Netherlands are transshipped at Rotterdam.

A detailed report on the port facilities of Rotterdam is given in Appendix XXII. This represents the facilities as they were before May, 1940. The destruction of the port facilities of Rotterdam by both German and English raiders has been extensive. Since Rotterdam has become a terminal for convoys to and from Germany and Scandinavia, and since it is used for internal barge traffic, these port facilities have been constant targets for R.A.F. attacks. A 1941 report indicated that about 800-1,0000 barges were usually present in Rotterdam; and shipping arrivals for the month of April, 1941 alone were 150,000 tons. There are also large concentrations of oil stores on the south bank of the river opposite Delshaven, and at Vlaardingen.

Its naval use is limited to "E" or "R" boats and patrol craft and to naval craft coming in for repairs. Its shipbuilding yards are busy on naval and merchant shipbuilding. Bunkering facilities at Rotterdam are given in Appendix XXIII.

Rotterdam's favored position for inland water traffic is discussed in the accompanying paragraph labelled Dutch Inland Waterways. Its position as a railway nexus is taken up in the report on Dutch Railroads.

(2) Amsterdam

Amsterdam is the second largest port of the Netherlands. Of the total shipping movement in Dutch ports, 8.41% took place in the port of Amsterdam.

Amsterdam, like Rotterdam, is largely an artificial port, located several miles from the coast. The original harbor at Amsterdam was an estuary between the mouth of the Amstel River and Zuider Zee, the body of water being called the Ij River. This outlet to the Zuider Zee is closed by three locks. The northern and southern locks are each 223 feet long and 45.9 feet wide. The middle lock is 296.8 feet by 59 feet. Since the Zuider Zee, now the Yssel Meer, is a shallow water route, the port of Amsterdam is connected with the North Sea by two canals. The North Sea Canal, which enters the North Sea at Ijmuiden, is 15.5 miles long; and it has replaced the older and much longer North Holland Canal.

Within the limits of the port of Amsterdam, there are 6 harbors and a series of long quays. (See the map in Appendix Volume.) Details of the areas of the harbors, length of quays and depth of water are given in Appendix XXII. The bunkering facilities for Amsterdam are given in Appendix XXIII. There are numerous warehouses -- customs, private, and bonded -- which in 1939 totalled in capacity 2,664,548 sq. feet. There are two cold storage warehouses and 149 storage tanks for inflammable and explosive cargo. In addition, there is special storage space available for wood, coal, grain, and seeds. Contrary to the case of Rotterdam, the traffic in bulk cargo at Amsterdam is relatively unimportant, while the traffic in

general cargo is greater. For this reason, the railroads play a much more important role in shipping at Amsterdam than they do at Rotterdam. Railroads connect Amsterdam with all parts of the kingdom and of Germany, Belgium and France. (For a description of this phase of shipping, see the paragraph on Dutch Railroads.) Likewise, many waterways center upon Amsterdam. (For a detailed description of waterways see the accompanying paragraph entitled, Inland Waterways.)

Since German occupation, commercial shipping in the port of Amsterdam has been reduced to a bare minimum of small vessels and barges. Shipbuilding is continuing, however. Both merchant and naval units are being built. The yards are also busy with repairs and barge building.

(3) Delfzijl

This is a Dutch port of increasing importance. Of the Dutch, Belgian, and French channel ports, Rotterdam and Delfzijl are being used for practically all large scale commercial traffic. It is located in N.E. Netherlands on the Ems River about 10 miles below Emden Harbor. The harbor consists of an irregular shaped tidal basin, called the Buitenhaven, and of an inner harbor situated inside the lock of the canal to Groningen. (For details of these two harbors, as well as for the River Ems and the canal to Groningen at Delfzijl see Appendix XXII.) There is storage space available for general cargo, fertilizers, coal, lumber, and potassium nitrate. The storage capacity is 100,000 square feet.

(4) Dordrecht

Dordrecht is located on an island at the confluence of four important waterways, -- the Old Maas, the Kil, the Noord, and the Merwede. It is located 35 miles from the sea on the eastern extension of the important New Waterway. It is very favorably located for transport shipping. Railways

and waterways connect it with the most important industrial regions of the Netherlands, Belgium, and Germany.

The port, in addition to a few small harbors, has four large harbors and 13 quays. The details of quays and harbors are given in Appendix XXII. All the harbors have railway connections. There are available storage facilities with a capacity of 214,000 square feet.

(5) Flushing

This small sea port, located on the southern end of Walcheren Island and at the mouth of the West Scheldt River, has only recently developed into a commercial center. The port has been developed under a limited liability company in which the national government and the municipality participate.

The port consists of an outer harbor and an inner harbor of two wet docks, i.e., a small commercial harbor and a naval harbor. The inner harbor can not take a ship with a larger draught than 24 feet. Details of the harbors are found in Appendix XXII. Its bunkering facilities are found in Appendix XXIII.

The port has developed into an important coal bunkering station with 5,500 tons of coal usually kept on hand. A new oil bunkering station, opened in 1935, greatly increased the importance of the port. According to a 1940 report, about 900 tons of oil are normally kept in stock. There are two storage sheds for general cargo and a storage tank installation with a capacity of 24,710 cubic feet. This had been used up to August, 1939 to store molasses. There are railway lines alongside.

In June, 1940, the lock separating the inner and outer harbors was destroyed and the piers heavily damaged or rendered inaccessible because of boats sunk alongside. In April, 1942, Flushing harbor was severely blasted by the RAF.

No record of damage is available.

(6) Ijmuiden

The port of Ijmuiden is an artificial harbor forming the approach to the Amsterdam North Sea Ship Canal. It consists of an outer harbor and several basins outside of the canal locks. The importance of the port is that almost the whole catch of the Netherlands sea fisheries is landed here. The blast furnaces and coke ovens at adjacent Velzen have added to the importance of this port. There is now only slight barge traffic, principally to the blast furnace, rolling mills and steel mills. (For details of the port see Appendix XXII.)

(7) Harlingen

This is a small commercial port in N.W. Netherlands. The port consists of five harbors details of which are given in Appendix XXII. It is a port used for shipping horticultural products principally. Port facilities are poor. There is communication with Leeuwarden and the inland waterway system.

(8) Helder (den)

This port is principally noted for the government naval dockyard located in the inner harbor. The harbor can take ships up to 15 ft. draught. (See Appendix XXII for details.)

(9) Terneuzen

This port is located at the mouth of the Ghent canal. The East (outer) Harbor has 2 locks and is used for inland craft. The West (outer) Harbor or New Harbor, with one lock, is for seagoing vessels. Large coal bunkers are always available, but no oil fuel. The port has excellent lifting appliances. (See Appendix XXII for particulars.)

(10) Zaandam

The port is located 4½ miles north of Amsterdam; and statistics for Amsterdam usually cover shipping

at Zaandam. The harbor is always accessible to vessels of a draught up to 27 ft. for the old harbor and 30 ft. for the new harbor. It is entered by way of the North Sea Canal from Ijmuiden.

c. Inland Waterways of the Netherlands

Most of the Netherlands can be considered delta land. Two of the greatest inland waterways of Europe, the Rhine and the Meuse or Maas, flow through the Netherlands to the sea, as does the main waterway of Belgium, the Scheldc River. These three streams have many estuaries. Their many channels are connected with each other by canals as are the many important branches of these rivers. The canals, therefore, are vital links in the transport system, not only of the Netherlands but also of all northwestern Europe.

There are nearly 300 navigable rivers and canals in the Netherlands, having a total length of 4,750 miles. This extensive network of rivers and canals is the most important means for shipment of heavy freight in the Netherlands. During the last of the prewar years, about 52.5% of all freight traffic was moved on the inland waterways. Only 15% was moved by rail, and 32.5%was moved over the roadways. The number of barges or boats engaged in casual shipping on the canals also gives some indication of the importance of the canal in the Dutch shipping system. Prior to the invasion the situation was as follows:

Boats	Tonnage	Type of Propulsion
7,335	2,730,107	not self propelled
3,534	11,635	sail and motor
6,044	570,326	motor driven
289	36,739	steam engines
1,961	194,886	other mechanical devices

Any interruption in the use of the waterways would tie up a great part of the Dutch transportation facilities.

This was experienced during the German invasion. However, most of the hindrances caused by the destruction of bridges and boats have been removed and facilities have been restored to normal use. It is estimated that during the invasion 1,700 boats were damaged in the canals, and of this number 700 were sunk.

Breaching of canals is only possible if the elevation of the water is above the surrounding land. However, in such cases the dikes are wide and particularly solid. The stretches of canal which are above the general ground level are easily spotted, since, normally, trees are not planted along rivers or along canals the water level of which is higher than that of the surrounding land. In such cases, shrubs are planted along the dike. Trees are planted along all other waterways.

The main arteries of the inland waterways are those which connect Amsterdam and Rotterdam with Germany, with the Limburg mining area, and with Belgium. The map in the Appendix Volume indicates these main arteries and they are described in detail in Appendix XXIV. The most important routes are as follows:

(1) Routes from Rotterdam to the Rhine

Rotterdam is linked to the North Sea by the New Waterway, about 20 miles long, which is not intercepted by locks or bridges and which is navigable to ocean-going vessels with a draught of 36 feet. From Rotterdam, the Rhine can be reached over two routes.

(a) By communicating stretches of the Nieuwe Maas, Noord, Merwede, and Waal Rivers. The Waal and Rhine Rivers join east of Nijmegen. This route has a depth of 13 feet and is available to vessels up to 1,475 tons. This waterway can carry up to 60,000,000 tons annually.

(b) By following the river Lek out of Rotterdam which becomes the Neder Rijn. This also has a depth of 13 feet

and is available for vessels up to 1,475 tons. This waterway can carry 20,000,000 tons annually.

Note: The Rhine can also be reached from the Ijssel Meer, through the communicating stretch of the Pannerden Canal and the Ijssel River, which enters the Ijssel Meer at Kampen. This waterway has a normal depth of 9 feet and can carry 20,000,000 tons of traffic annually.

(2) Routes from Dutch waters to Belgium

By following numerous channels among the islands of Zeeland and by using either the canal which cuts through the island of Walcheren or the canal cutting through Zuid Beveland, it is possible to reach the estuary of the Schelde. From here, there are two waterways into Belgium.

(a) Terneuzen Canal which connects the city of Ghent, Belgium, with the Dutch waterway. There are two locks before Ghent. The first is 27' 3" deep, and the second, giving access to the Schelde above Ghent, is 9' 10" deep. Boats of more than 600 tons can not proceed beyond Ghent.

(b) Up the Schelde to Antwerp. This waterway is navigable to boats up to 2,000 tons.

(3) The Important Amsterdam Waterways.

(a) The North Sea canal connects Amsterdam with Ijmuiden and the North Sea. This has a depth of 36 feet; and a new lock 49 ft. deep (on sill) has been constructed. The destruction of the sea locks on this canal would result in a great part of Amsterdam being flooded. At Ijmuiden, a boat was sunk and not completely removed, leaving the channel partly obstructed (Feb., 1942). Much of the remaining passage is silting up; hence, it is only open to boats of a limited draught. The Germans have repaired the locks at Ijmuiden which were damaged during the invasion.

Before the invasion, this was an extremely important route, since through it, the largest ocean-going vessels could proceed to Amsterdam. Now the importance of Amsterdam as a shipping center has been reduced to an average of 4 or 5 merchant vessels of over 1,000 tons, an occasional tanker and 450 barges of which about 20 are of the invasion type.

(b) There are two direct canal routes between Amsterdam and Rotterdam; but they are second class routes. The most important canal linking Amsterdam with the Rhine waterway is the Merwede Canal, which joins the river Lek as well as the Waal. This gives access to Rotterdam, to the west, and the Rhine waterway to the east. Up to the river Lek the canal has a depth of about 10 feet and has a capacity of 20,000 tons annually. South of the river Lek and joining the Maas, it becomes a second class canal. The projected Amsterdam-Rhine Canal, not yet completed, follows the general route of the Merwede Canal.

(c) The North Holland Canal, connecting Amsterdam with Den Helder, is a second class canal, the importance of which diminished with the building of the North Sea canal. It does form an important alternate route to the sea, however.

(4) The Important Waterways to the Limburg coal fields

(a) The Maas and Waal Rivers are connected in the vicinity of Nijmegen, by the Waal-Maas Canal. Locks on both ends are 9.8 feet deep. There are four locks in the Maas River before Maasbracht, in Limburg, is reached. The Juliana Canal, connecting Maasbracht with Maastricht, is a continuation of the canalized Maas River. This waterway to Maastricht is navigable for boats up to 2,000 tons. It is, therefore, accessible to the Rhine barges. The importance of this waterway is that it is the main outlet from the coal mining area of the Netherlands to the Lower Rhine and Rotterdam. It also gives an approach to the important Albert Canal in Belgium, the present state of which is unknown.

(b) The distance to Rotterdam from Limburg has been shortened by the waterways provided by the Zuid-Willems Canal and the Wilhelmina Canal. There are numerous locks in these waterways. They are second class routes, but important as alternate routes.

(5) The Provinces of Groningen and Friesland in the North

They are covered with a network of canals and water routes. The ports of Harlingen in the west and Delfzijl in the east are connected with a series of waterways which give Leeuwarden and Groningen access to the sea. Most of the canals in northern Netherlands are second class canals. The greater number of the main waterways of Friesland and Groningen permit passage of a vessel of 5 or 6 feet draught.

Since the invasion of the Netherlands, the canals have become even more important as a factor in Dutch shipping. The oil reserves of the Netherlands have been exhausted; hence, transport by motor has been reduced to a minimum. The result has been that the inland waterways have been taxed to capacity and severely overburdened.

37. Commercial Aviation

Civil aviation advanced very rapidly in the Netherlands. Commercially minded Netherlanders early recognized the potentialities of commercial aviation, and immediately following the World War, steps were taken to make Amsterdam an important international air traffic center.

The chief commercial transport company in the Netherlands is the K (oninklijke) L (uchtvaart) M (aatschappij voor Nederland en Kolonies), or the Royal Dutch Airlines. The company is a private enterprise (organized in 1919) in which the royal government has a financial interest. Since 1927, the company has been subsidized by the government. In 1938 this subsidy amounted to $280,000. This money was to be used only in the case of an operational deficit. In 1927 the K (oninklijke) N (ederlandsch) I (ndische) L (uchtvaart) M (aatschappij) was organized. The K.L.M. and the K.N.I.L.M. are really joint companies with a joint committee of management containing the governmental and corporation members. The latter company operated exclusively in the Dutch East Indies Colonies.

The development of the use of commercial aviation has been fairly rapid as can be seen from these leading statistics of K.L.M. traffic:

Number of Pilots and Planes in Operation

Year	Number of Pilots	Number of Planes
1933	34	37
1934	38	37
1935	40	51
1936	33	57
1937	69	44
1938	70	53

According to the latest official statistics there were registered on January 1, 1939, under a regular air transport company, 46 planes. The total number of civil air craft in the Netherlands on January 1, 1939, was 125.

Number of Passengers and Weight of Baggage, Freight and Post carried by the K.L.M.

Year	No. of Passengers[1]	Wt. of Freight and Baggage[1] Tons	Wt. of Post[1] Tons	Wt. of Parcel Post[1] Tons
1933	41,701	1,360,555	172,089	40,400
1934	85,969	1,192,537	210,000	58,098
1935	102,847	1,482,501	339,054	77,450
1936	111,300	1,653,164	479,300	66,008
1937	114,678	1,802,769	660,829	66,322
1938	153,907	2,521,930	864,806	73,696

There is keen public interest in aviation. Gliding Clubs have been organized throughout the country. Most of these are affiliated with the Association of Gliding Clubs. There are several semi-popular and scientific periodicals devoted to aviation - two monthlies, one quarterly, and two weeklies.

Up to the time of the German occupation of the Netherlands in May, 1941, the K.L.M. maintained regular flight schedules to the following foreign cities: London, Liverpool, Copenhagen, Stockholm, Oslo, Hamburg, Berlin, Cologne, Paris, Prague, Vienna, Budapest, Rome, Zurich, and to the colonies in the Dutch East Indies.

At the outbreak of this war all civil flying in the Netherlands was prohibited save for commercial operations of the K.L.M. This company, as far as possible, maintained service to neighboring

[1]The great disparity existing in the figures given in various sources is caused by the variety of inclusions in the total figures. These figures are derived from the Dutch Central Bureau of Statistics, Jaarcijfers, and include all K.L.M. traffic except in the West Indies.

continental countries and to the Dutch colonies. However, its service to the colonies has now been cut off and the extent of service operation within continental Europe is not known. Several of the K.L.M. airliners which survived the bombing of the Amsterdam airport flew to England where the K.L.M. is cooperating with the British Overseas Airways Corporation.

In Appendix XXV there is a table of civil aviation fields and facilities as they existed before May, 1940. The bombardment of airports at Flushing, Amsterdam, and Rotterdam by the R.A.F. has been particularly intense. The extent of the damage is unknown.

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38. Commerce

Foreign commerce plays a very important role in Netherlands economy. The size of the Dutch merchant marine, which in 1940 represented 4.9% of the world's tonnage, attests in part the importance of Dutch commerce. In a normal year, such as 1937, the imports of the Netherlands amounted to $98.80 per capita and its exports, in the same year, amounted to $73.20 per capita. The cause for this unusually high participation in the import and export markets derives especially from the fact that, except for horticultural products and coal, the Netherlands is lacking in all essential raw materials. Since industrialization is proceeding rapidly in the Netherlands, the imports of vital raw materials for industry have increased commensurately. Furthermore, the agricultural industry, the backbone of Dutch economy, normally produces important exports, but these exports are dependent upon the imports of fodder and fertilizer in order to maintain intensive agriculture. The geographical position of the Netherlands likewise contributes to the development of an intensive commercial life. Situated as it is at the mouth of three international rivers, the Netherlands participates in an immense amount of transit trade destined for, and coming from, the large industrial hinterland in the German Rhineland.

Semi-manufactured goods stand first in the value of total imports of the Netherlands. Next come those imports grouped in the agricultural, live stock and fisheries category. Third in value are the imports in the chemical and mineral ores group.

On the Dutch export list for 1939 the products grouped in the agricultural, live stock and fisheries category ranked first in value. This was followed by processed food, while metal work and shipbuilding ranked third. The import and export items, grouped in broad categories, rank in the following order:

Imports	Exports
1. Metal work, materials for ships, etc.	1. Agriculture, live stock, fisheries.
2. Agriculture, live stock, fisheries, etc.	2. Processed foods.
3. Chemical products	3. Metal work, shipbuilding, etc.
4. Mineral ores	4. Chemical products
5. Textiles	5. Textiles
6. Wood, cork and straw products	6. Mineral ores
7. Processed foods	7. Paper
8. Ceramics, cement, glass, etc.	8. Leather, oilcloth, rubber fabrics.
9. Leather, oilcloth, etc.	9. Printing and engraving.
10. Clothing	10. Ceramics, cement, glass, etc.
11. Paper	11. Wood, cork, straw products
12. Printing and engraving	12. Clothing

A comparison of these two columns indicates the great dependency of the export market upon the import market. This is also indicated in Table I, Appendix XXVI. For example, the live stock and its many subsidiary industries are the backbone of the export trade, constituting 40% of the total export trade of the Netherlands; yet these industries must rely upon imports to supply the fodder and fertilizer needed to maintain an intensive character. Any cutting off of the feed imports would cause such a decline in the live stock industry that it could hardly supply domestic needs. The same is true of the export of manufactured goods. The export of manufactured goods is completely dependent upon the importation of raw materials and semi-manufactured goods. (For a detailed list of the value of the chief items of import and export in 1939 see Appendix XXVI, Table II.)

Dutch trade usually shows an unfavorable balance. In 1938 its imports amounted to $778,264,000 and its exports

amounted to $571,640,000 and in 1939 its imports were valued at $808,982,000 and its exports at $515,379,000. For many years back only 70% to 75% of the imports were covered by exports. This deficiency is covered, however, by Dutch carrying trade and by foreign investments.

The chief import and export customers of the Netherlands are her neighbors. Germany stands highest in the list of countries from which goods are imported into the Netherlands. In 1938, $185,122,000 worth of products were imported from Germany, or 21,76% of the total. In 1939 this increased to $202,060,000 or 23.58% of the total. Belgium and Luxembourg are next in order of importance. In 1938, 11.46% and in 1937, 14.50% of the total imports came from Luxembourg and Belgium. The U.S., from which 10.84% in 1938 and 9.63% in 1939 of the total imports were derived, is third in the order of importance.

In the export trade Great Britian is first in importance, taking $128,716,000 worth of products or 22.65% of the total exports in 1938 and $120,805,000 or 23.44% in 1939. Germany, Dutch East Indies, Belgium and Luxembourg follow in importance in the order given. Exports to the U.S. formed only 3.60% of the total in 1938 and 4.38% in 1939. The principal products taken by Great Britain were agricultural products. (See Table III, Appendix XXVI for imports and exports according to principal countries and value.)

Owing to her extremely favorable location, the Netherlands has a large international distributing and transit trade. This distributing trade is stimulated by the number of refining and finishing industries which have developed in the Netherlands. Dutch transit trade developed because of the geographical position of the country. Most of the transit trade passes through Rotterdam enroute to the interior of Northwest Europe. In 1938, approximately 42,000,000 tons passed through Dutch ports and were transshipped to foreign ports. This does not include 15,000,000

tons which passed through Dutch waters without transshipment. In 1939 this figure was reduced to 30,000,000 tons transshipped and 12,00,000 tons which passed through. (See Table IV, Appendix XXVI for statistics of this transit trade.)

39. Communications

a. Radio

The Dutch radio broadcasting stations are located at Hilversum, Jaarsveld, Kootwijk, Bloemendaal, Scheveningen and Huizen. A list of these stations showing call sign, frequency, location, power, and owner is given in Appendix XXVII. The stations at Hilversum and Kootwijk are the important, most powerful long and medium wave broadcasting stations of the Netherlands. The important short wave transmitters are located at Huizen; and it was reported in 1940 that short wave transmitters were being placed in use at Kootwijk. The stations at Bloemendaal and Scheveningen are very small stations, the latter being a government owned station. (See the map of Telecommunications in the Appendix Volume.)

The evolution of radio broadcasting in the Netherlands has been unique. Almost from the beginning Dutch broadcasting has been supported by voluntary associations. Beginning with only one association, the AVRO (Algemeene Vereeniging Radio Omroep), three other major associations soon entered the field - KRO (Catholic Radiobroadcasting Association NCRV (The Dutch Christian [Protestant] Association) and the VARA (Workers society). These 4 associations have a subscription membership of 600,000 persons. Of these four, the AVRO has about 250,000 members. The smallest of the big four, KRO, has a membership of 100,000. These associations publish periodicals in which advertising pays well. There is no commercial broadcast, since it is prohibited by law. The long, medium, and short wave facilities of the various transmitters at Hilversum, Jaarsveld and Kootwijk are leased and used alternately and equally by the four associations. 5% of the time allotted to each major association is given to the minor associations. To facilitate legislation for over-all regulations and to establish a centralized control of stations under the government, the state, in 1935, provided for a limited liability company, called the Nozema (Nederlandsche-Omroep-Zender-Maatschappij), in which the state controls 60% of the stock and the four major associations hold 10% each. The Nozema also owns the Jaarsveld station.

The number of radio listeners possessing receiving sets in May, 1940 was 1,006,513. However, in addition there were 326,585 connections with central receivers. This wired distribution takes place from one central receiving set and is reproduced with a magnetic loudspeaker. Furthermore, the practice of serving more than one household by a single set with multiple extension wires is a common practice. This makes it impossible to place even a close estimate upon the number of radio listeners. Based only upon the number of registered sets and those connected to a large distributing center, the registration amounts to approximately 160 per 1,000 inhabitants.

Amateur radio broadcasting was only fairly popular just before the invasion. There were about 400 amateurs operating; these were organized into the Dutch Society of International Radio Amateurs. Likewise, the use of radio by police was not very extensive prior to the invasion.

A complete list of the fixed radio stations is given in Appendix XXVII. Statistics indicate that in 1939, 25,986 radiotelegrams were transmitted from coastal stations to ships of all nationalities and 82,852 messages were received by these coastal stations. In addition, statistics show that in 1939, 37,162 radio conversations were exchanged via the coastal stations. On Sept. 12, 1939, a direct radio-telephone circuit was established between New York and Amsterdam. The terminal at Amsterdam was operated by the government. This was suspended May 15, 1940. Before September, 1939, connection with the United States had been made via cable to London. The Dutch also had direct circuits between the home country and the Netherlands Indies. For this service 8 circuits were available. These have also been suspended.

b. Telegraph

It has long been the policy of the Dutch government to operate the telegraph, telephone, postal and radio services more or less as a government monoply. These services are placed under the P.T.T. (Department of Post, Telegraph and Telephone), a branch of the Ministry of Internal Affairs.

There are only a few private telegraph lines still in
1370 existence, all others being owned by the government. According to the latest

report (Bern Bureau, 1940), there were 2,238 state telegraph stations in the Netherlands, whereas there were only two private company offices. At the end of 1938 there were 9,000 miles of telegraph wire, or 13% of the world's total. Over this network 3,588,000 telegrams were sent in 1938, or 0.4 per capita. This placed the Netherlands in ninth place among European nations for per capita telegraph communication. A detailed breakdown of statistics for the Dutch telegraph system is given in Appendix XXIX.

The multiplex telegraphy system, which enables simultaneous transmission of a number of messages over one wire, had long been in use in communications with Germany. An extension of this system was being adopted for other points as well.

Telex or teletypewriter exchange service was available between the Dutch cities and also to England, Switzerland, Belgium, and Germany.

c. Telephone

The Netherlands has a well developed telephone system. A comparison of statistics for telephone and telegraph use indicates that in 1939 there were:

468,000,000 telephone communications)
3,588,000 telegraph communications) Total - 471,588,000,

or 99.2% telephone, and 0.8% telegraph. The per capita relationship between telephone and telegraph communications is 53.9 telephone, 0.4 telegraph, or 54.3 for both. Latest statistics (1939) show that the Netherlands ranks tenth in the world in per capita wire communications and twelfth in the world in the number of telephones per 100 population. Other small European nations surpassing her are Denmark, Norway, Sweden, Switzerland and Finland.

Statistics for telephone traffic in the chief cities give a good indication of the extent of telephone use in the urban centers.

City	Population	No. of Telephones	Telephones per 100 population
Amsterdam	794,000	67,927	8.56
Haarlem	174,000	14,474	8.32
Rotterdam	635,000	44,145	6.95
The Hague	540,000	57,635	10.67

Not all of the telephone service is government owned. The systems of Amsterdam, Rotterdam and The Hague are municipally owned; but they operate on a year to year lease from the state.

Rotterdam has the Ericsson automatic system. The main office was ruined during the invasion, the capacity of its switching system being thus reduced to less than one-half.

The Hague has the rotary automatic system. There are 11 city offices in the town and 50,000 lines.

Amsterdam has the step-by-step system of the Siemens-Halske make. There are 60,000 lines and 6 or 7 city telephone offices.

The remainder of the country is operated by the P.T.T. The Siemens-Halske step-by-step automatic system was adopted for the greater part of the country. Haarlem has the rotary automatic system. Appendix XXX indicates that of the 1,513 exchanges, 439 were automatic. It must be kept in mind that these exchanges which are automatic are the large ce exchanges. Therefore, the figure in Appendix XXX, representing subscriber lines connected to the automatic system, is more indicative of the extent of automatization of telephone exchanges. About 55-60% of the telephones were connected to the automatic system. Much progress has been made toward converting the Dutch telephone network into a national dialling system, on a time and zone multiple metering basis. This plan was to be completed by 1944, when 90% automatization was expected. By 1939, 38% of the rural telephones had already become automatic.

The interconnecting cables in the Netherlands usually run along the roads and canals. Some of the circuits are short and not loaded, and others are loaded. A few years ago the P.T.T. decided to adopt a specia multi-channel carrier system on a large scale. This is known as the Bast system and is used on non-loaded cables. This equipment was manufactured in Antwerp and assembled in The Hague.

The chief cities of the Netherlands were connected by direct connection with all of the chief centers of Europe. The map in the Appendix Volume shows these long distance telephone lines.

d. Cable

The many islands of the Netherlands are connected to the telecommunication system by submarine cables. The map in the Appendix Volume indicates the location of these cables. In Appendix XXXI, a list of these cables is given. The international submarine cables emanating from or terminating in the Netherlands, are British-Dutch owned. Three cables run from Domburg, Netherlands, to Aldeburgh, England; one cable runs from Zandvoort, Netherlands, to Lowestoft, England; and 2 run from Zandvoort to Benacre, England.

e. Post

The postal service of the Netherlands is efficient and adequate. In 1938 there were 2,035 post offices which handled 55.5 units of mail per capita. In addition to mail services the postal department also maintains a postal savings bank. The postal check and postal transfer services are used to a great extent in the Netherlands.

40. Finance

a. Before German Occupation

The monetary unit of the Netherlands is the guilder (gulden) or florin, which is divided into 100 cents. The rate of exchange at the time of the German occupation of the Netherlands was $.5308, or 1.8838 guilders = $1,00. The following coins were in circulation at the time of the invasion:

Copper (½ cent
or (1 cent -- (in plural, centen)
Bronze (2½ cents -- (called, half stuivers)

Nickel 5 cents (stuiver)

Silver 10 cents -(dubbeltje)

25 cents (kwartje)

50 cents

1 gulden or florin - 100 cents

2½ gulden (rijksdaalder) - 250 cents

Notes were issued by the Netherlands Bank for 10, 20, 25, 40, 60, 100, 200, 300, 500, and 1,000 gulden.

The value of money minted (in 1,000's of guilders) for Netherlands home use only was as follows:

	Gold	Silver	Copper & Nickel
1937	Off the Gold Standard since	11,860	138
1938	1936	12,140	418

The bank of the Netherlands is a private bank but it is the only one which had obtained the right to issue bank-notes. All paper money was issued by this bank. This Netherlands Bank kept the State Treasury, the cash of the State Postal Savings Bank, and the treasury of several institutions.

The following figures give a general idea of the number of banks and depositors in the Netherlands prior to May, 1940:

	No. of Sav. Bks.		Total Deposits in 1,000 Guilders		No. of Depositors		Am't per inhabitant in guilder	
	1937	1938	1937	1938	1937	1938	1937	1938
Kind of Bk.								
St. Post.Sav.	--	--	602,568	687,778	2,306,123	2,361,612	69.75	77.77
Private	281	268	554,861	562,440	1,308,885	1,341,914	63.96	64.44

b. Under German Occupation

The immediate financial reaction to the invasion and consequent occupation of the Netherlands by the Germans was a scarcity of money. During the first two months of defeat and occupation, the Netherlands Bank lost 5 millions in silver coins. To alleviate the situation, more silver coins and silver certificates were placed in circulation. Some communities even issued emergency money. The scarcity was never as acute as in neighboring Belgium where one-fourth of the population fled to France, and these refugees carried as much money with them as possible. After calm was restored, the Netherlands was faced with an abundance of money resulting from such factors as: 1. Impossibility of industry and trade to replace commodities sold by them. 2. The order making the German Reichskreditkassenscheine legal tender. The latter certificates were immediately exchanged by holders so that they did not appear in circulation, but they did contribute to money abundance. It was only in the first days of occupation that people were compelled to accept ordinary German bank notes. Following the German occupation, the gulden was pegged to the Reichsmark at the rate of 1 gulden = 1.33 Reichsmarken, or $0.532 at par. After April 1, 1941, the "devisen frontier" was lifted between Holland and Germany. Rost van Tonningen was appointed by the Germans as the director of the Bank of the Netherlands. All clearing arrangements between Holland and Germany have been cancelled. These factors have caused Holland to be virtually annexed financially to the Reich.

On January 16, 1942 an order was issued by the Secretary General of Finance authorizing the issue of zinc kwartjes (quarters), dubbeltjes (dimes), half stuivers (2½ cents) and

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centen (pennies). Since December, 1941 the stuiver (nickel) had already been issued in zinc. All are of new design. The cause for this order was supposedly the scarcity of coins, but accompanying the order was a statement that after a certain date all old coins not exchanged for the new would have no value. On December 10, 1941 the German authorities learned of the issuance of a new 25¢ silver coin bearing the effigy and inscription of Queen Wilhelmina. Immediately these were recalled, but most of them have been kept in hiding.

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SURVEY OF THE NETHERLANDS

Volume II - Appendices

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By D C Bank
Date JAN 3 1947

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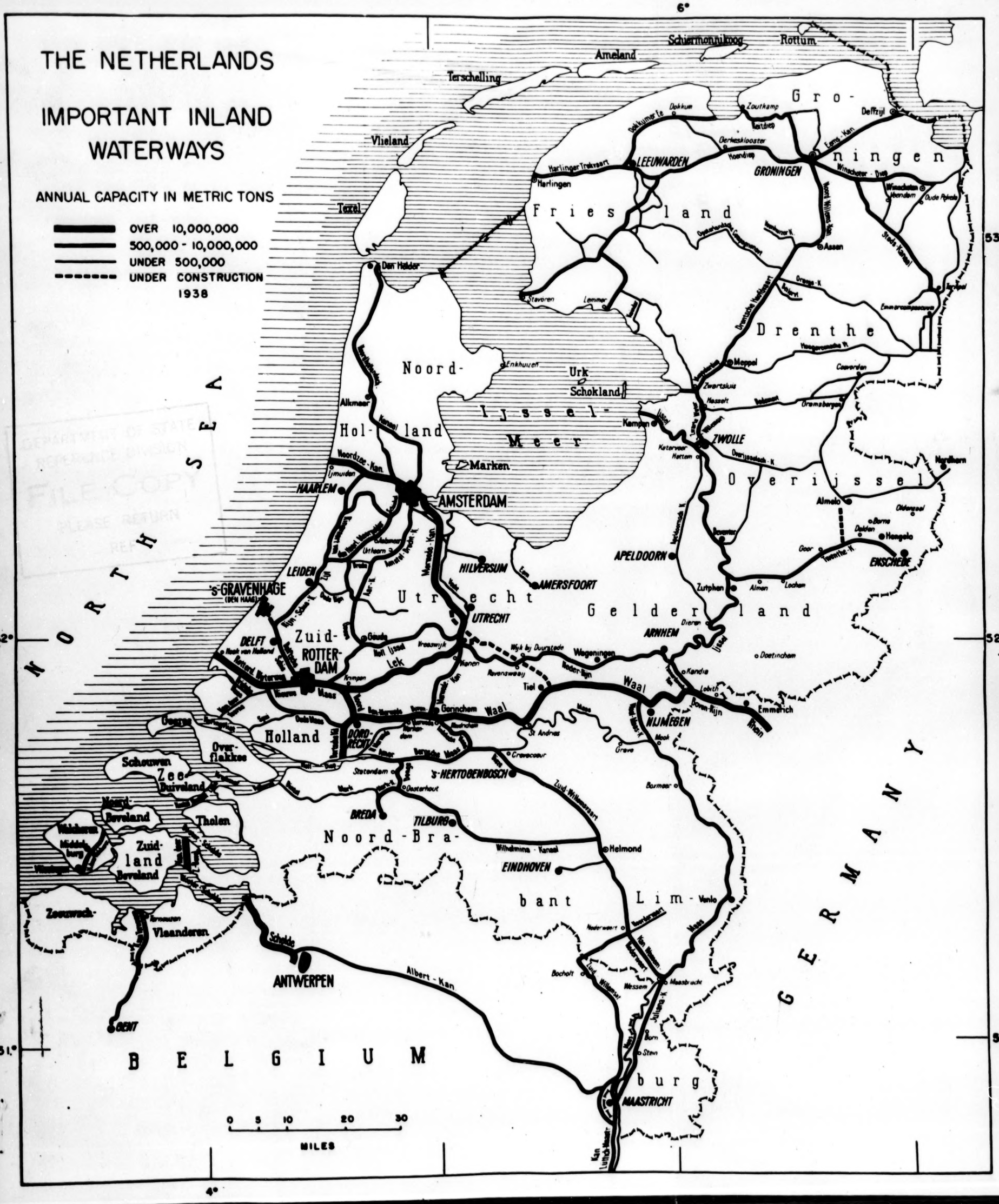
THE NETHERLANDS

IMPORTANT INLAND WATERWAYS

ANNUAL CAPACITY IN METRIC TONS

- OVER 10,000,000
- 500,000 - 10,000,000
- UNDER 500,000
- UNDER CONSTRUCTION 1938



MAP NO. 603, JUNE 26, 1942

DRAWN IN GEOGRAPHY DIVISION, O.S.S.

PORT OF AMSTERDAM

Miles

0 ¼ ½ 1 2

From Netherland Chart

Zaandam

N

Petroleum Haven

J. P. Coenhaven

Minerva Haven

Nieuwe Houthaven

Oude Houthaven

Westerdok

De Ruyter Kade

NORTH HOLLAND CANAL

Oosterdok

Handels Kade

Sumatra Kade

Suriname Kade

Levant Kade

Ertskade

Entrepothaven

Spoorwegbassin

PROVISIONAL EDITION

RESTRICTED

ROAD SYSTEMS IN THE NETHERLANDS

PRIMARY ROADS

SECONDARY ROADS

MAJOR CITIES

EAST OF 4° GREENWICH

5°

6°

7°

53°

52°

51°

NORTH SEA

IJSSEL MEER

DELFZYL

DOKKUM

GRONINGEN

LEEUWARDEN

HARLINGEN

WINSCHOTEN

ASSEN

DEN HELDER

GOEVORDEN

ALKMAAR

ZWOLLE

MARKEN

HAARLEM

AMSTERDAM

ALMELO

IJSSEL

DEVENTER

HENGELO

ENSCHEDE

HILVERSUM

APELDOORN

LEIDEN

AMERSFOORT

ZUTPHEN

'S-GRAVENHAGE

UTRECHT

ARNHEM

DELFT

ROTTERDAM

NIJMEGEN

DORDRECHT

WAAL R.

MAAS R.

'S-HERTOGENBOSCH

BREDA

TILBURG

VLISSINGEN

MIDDELBURG

TERNEUZEN

BERGEN OP ZOOM

ROOSENDAAL

EINDHOVEN

VENLO

OOSTBURG

HULST

SAS VAN GENT

ROERMOND

BELGIUM

GERMANY

MAASTRICHT

0 10 25 50

Miles

0 10 25 50

Kilometers

MAP NO. 601, JUNE 16, 1942

COMPILED AND DRAWN IN THE GEOGRAPHY DIVISION, O.S.S.

TELECOMMUNICATIONS IN THE NETHERLANDS

------ SUBMARINE CABLES

—— LONG DISTANCE TELEPHONE CIRCUITS

RADIO STATIONS

▲ UNDER 10,000 WATTS

▲ OVER 10,000 WATTS

NORTH SEA

IJSSEL MEER

BELGIUM

GERMANY

SCHIERMONNIKOOG

TERSCHELLING

AMELAND

HOLWERD

VLIELAND

ST. ANNA PAROCHIE

GRONINGEN

TO EMDEN

LEEUWARDEN

FRANEKER

TEXEL

SNEEK

ASSEN

HEERENVEEN

TER APEL

TO MEPPEN

BEILEN

DEN HELDER

DEN OEVER

SCHAGEN

MEPPEL

URK

SCHOKLAND

ALKMAAR

HOORN

KAMPEN

ZWOLLE

PURMEREND

YMUIDEN

MONNIKENDAM

MARKEN

TO NORDHORN

TO BENACRE, ENGLAND

TO LOWESTOFT, ENGLAND

ZANDVOORT

HAARLEM

AMSTERDAM

EPE

RAALTE

OLDENZAAL

TO BENTHEIM

BLOEMENDAAL

HUIZEN

TO MÜNSTER

NORA

HOOFDDORP

DEVENTER

HENGELO

TO GRONAU

SASSENHEIM

HILVERSUM

LOCHEM

ENSCHEDE

KATWIJK

LEIDEN

KOOTWIJK

AMERSFOORT

SCHEVENINGEN

ZUTPHEN

NEEDE

'S-GRAVENHAGE

WOERDEN

UTRECHT

EDE

WINTERSWIJK

DELFT

DOORN

HOOK OF HOLLAND

GOUDA

VREESWIJK

ARNHEM

JAARSFELD

CULEMBORG

TERBORG

ROTTERDAM

TIEL

HELLEVOETSLUIS

DORDRECHT

NIJMEGEN

TO CLEVE

TO EMMERICH

TO GOCH

DEN BOMMEL

LAGE-ZWALUWE

'S-HERTOGENBOSCH

TO ALDEBURGH, ENGLAND

BREDA

DOMBURG

TILBURG

MIDDELBURG

ROOSENDAAL

TO ESSCHEN

EINDHOVEN

VLISSINGEN

VENLO

TO KREFELD

OOSTBURG

TO ANTWERP

TO TURNHOUT

TO KNOCKE

TERNEUZEN

TO GENT

TO NEERPELT

ROERMOND

TO M.-GLADBACH

TO SELZAETE

SITTARD

HEERLEN

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MAP NO. 608, JUNE 25, 1942

COMPILED AND DRAWN IN GEOGRAPHY DIVISION, O.S.S.

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APPENDIX I

TABLE I - PROVINCES: AREA AND POPULATION (1938)

Provinces.	Area	Population	Per sq. Mile
Groningen	895	421,605	471.2
Friesland	1,291	422,333	327.2
Drenthe	1,029	245,321	238.4
Overyssel	1,302	569,920	437.8
Gelderland	1,940	914,207	471.2
Utrecht	526	472,709	898.1
North Holland	1,142	1,666,368	1459.9
South Holland	1,130	2,138,819	1892.2
Zeeland	690	254,565	369.2
North Brabant	1,921	1,019,123	530.7
Limburg	846	602,983	712.5

APPENDIX I, TABLE II

POPULATION OF CITIES WITH 20,000 OR MORE INHABITANTS (Dec 31, 1939)

Amsterdam	800,594	Emmen	48,586
Rotterdam	619,686	's-Hertogenbosch	48,782
The Hague	504,264	Velzen	48,730
Utrecht	165,028	Zwolle	42,525
Haarlem	140,469	Deventer	41,096
Groningen	121,632	Hengelo (O)	41,776
Eindhoven	113,128	Kerkrade	37,564
Tilburg	97,338	Den Helder	37,325
Nymegen	95,130	Zaandam	36,023
Enschede	91,494	Ede(Gld.)	36,436
Arnhem	90,495	Almelo	36,247
Leiden	78,198	Zeist	33,642
Hilversum	74,036	Gouda	33,258
Apeldoorn	72,666	Haarlemmermeer	33,174
Maastricht	67,902	Alkmaar	32,815
Dordrecht	62,980	Vlaardingen	31,038
Schiedam	62,685	Bussum	29,325
Leeuwarden	54,971	Helmond	28,787
Delft	54,897	Venlo	27,872
Breda	51,804	Rheden	27,377
Heerlen	50,502	Voorburg	28,349
Amersfoort	48,944	Roosendaal en Nispen	26,148
Bergen op Zoom	25,343		
Hilligersberg	23,321		
Vlissingen (Flushing)	23,002		
Heerenveen	22,169		
Zutphen	21,525		
Beverwijk	21,272		
Renkum	21,033		
Kampen	20,737		
Assen	20,311		

APPENDIX II

Statistics of Living Costs and Wages

TABLE I.- Food Prices (October 1939)

These prices are based on kilograms unless otherwise stated.
1 kilogram=2.204 lbs.; 1 liter=1.05 quarts.

Wheat bread	$0.106	Cream	$0.784
Rye bread	0.095	Butter	0.975
Flour (wheat)	0.10	Cheese	0.434
Oatmeal or rolled oats	0.116	Eggs (1)	0.031
Rice	0.106	Peas	0.106
Macaroni	0.243	White or red haricot beans	0.19
Beef		Potatoes	0.026
1st quality	0.641		
2nd quality	0.577	Green or red cabbage	0.037
Pork		Apples	0.084
1st quality	0.614		
2nd quality	0.466	Prunes (dried)	0.196
Mutton		Jam	--
1st quality	0.482		
2nd quality	0.344	Sugar (white gran.)	0.243
Veal		Chocolate (cooking)	--
1st quality	0.752		
2nd quality	0.365	Coffee	0.789
Ham	1.14	Chicory	--
Bacon	0.53	Tea	1.36
Smoked fish	--	Cocoa	0.651
Margarine	0.636	Salt	0.047
Lard	0.593	Beer (lit)	--
Olive Oil (price based on price per liter at rate of 0.9 kg. for 1 liter)	0.371	Wine (lit)	--
Milk (lit)	0.079	Firewood (100 kg.)	3.18
		Coal (100 kg.)	1.42

For the availability of these items see the ration table in Appendix II, Table II

Table II

Food Rationed in the Netherlands

Consumer Group	Bread and Flour (Flour Equiv.)	Sugar	Marmalade Jam	All Fats	Cheese	Milk	Meat and Meat Products	Fish	Eggs (no.)	Potatoes	Coffee etc.	Vege-tables	Rice
Normal Consumer	1,456	225	125	200	125	1,802	250	NR-S	R	2,000	60	60	
Heavy Worker	2,149	R	R	300	R	R	375	NR-S	R	R	60		
Very Heavy Worker	2,842	R	R	600	R	R	625	NR-S	R	R	60		
Children under 4	763	R	R	100	R	7,210	125	NR-S	R	R	R	125	
Children 4-14	R	R	R	R	R	3,605	R	NR-S	R	R	60		
Minors 14-20	1,764	R	R	R	R	R	R	NR-S	R	R	60		

All figures are grams per week unless otherwise stated.
Foods not in table are not rationed as far as known.
NR - known to be not rationed.
NR-S - known to be not rationed but scarce.
R - known to be rationed, but quantities not known.
Meat includes 20% bone.
These include ersatz products as well.
Bread flour consists of 65% wheat flour, 25% rye, 10% barley.
Eggs are actually unavailable except for invalids.
Children under 4 receive 12 grams of cocoa.

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TABLE III Wages paid in industries of the Netherlands

Wages of Adult Males

Coal Mining	
Underground	$2.94 daily
Surface	2.22 "
Metals	
Skilled worker	0.333 an hour
Semi-skilled	0.291 "
Unskilled	0.265 "
Building (Amsterdam)	
Masons	--
Carpenters	0.349 an hour
Masons assistants	--
Harbors (Amsterdam)	
Dockers	17.299 per week

Amsterdam Wages (1938)
(per hour)
Adult Males

Industries (total)	
Skilled worker	$0.379
Semi-skilled	0.335
Unskilled	0.308
Metals	
Skilled	0.374
Semi-skilled	0.357
Unskilled	0.324
Diamond	
Skilled	0.412
Municipal building	
Skilled	0.357
Semi-skilled	0.341
Road construction	0.319
Wood	
Sawmill, semi-skilled	0.357
Planing, unskilled	0.335
Furniture making	
Skilled	0.363
Semi-skilled	0.291
Printing	
Skilled	0.39
Semi-skilled	0.28
Lithography	
Skilled	0.357
Semi-skilled	0.341
Chemigraphy	
Skilled	0.407

Bookbinding	
Skilled	$0.368
Semi-skilled	0.308
Clothing	
Skilled	0.423
Semi-skilled	0.335
Chemicals	
Semi-skilled	0.352
Bakeries	
Skilled	0.3355
Semi-skilled	0.28
Unskilled	0.253
Cocoa and chocolate making	
Semi-skilled	0.352

Wages of Adult Females (1937 latest available)
(per week)

Industries (total)	$18.70
Paper and cardboard	15.40
Printing and bookbinding	20.90
Clothing	19.25
Knitting	15.95
Chemicals	14.85
Food	19.25
Cigarette	20.90

APPENDIX II, TABLE IV

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WAGES PER HOUR IN OCTOBER 1939
(Adult male workers in various occupations.)

NETHERLANDS

Industry and occupation	Amsterdam Rates	Amsterdam Earnings	Hague Rates	Rotterdam Rates	Rotterdam Earnings	Utrecht Rates	Utrecht Earnings
Mechanical Engineering							
Fitters and turners	($0.344)	$0.408		($0.318)	$0.386	($0.307)	$0.365
Iron moulders	(0.344)	0.408		(0.318)	0.386	(0.307)	0.365
Patternmakers	(0.344)	0.408		(0.296)	0.35	(0.307)	0.365
Laborers (unsk.)	(0.27)	0.323		(0.27)	0.323	(0.238)	0.275
Building							
Bricklayers and masons	0.349		0.349	0.339		0.328	
Structural iron workers	(0.312)	0.376	0.349	(0.296)	0.35	(0.27)	0.318
Concrete workers	0.349		0.349	0.339		0.328	
Carpenters and joiners	0.349		0.349	0.339		0.328	
Painters	0.328		0.328	0.328		0.328	
Plumbers	0.35		0.35	0.35		0.333	
Electrical fitters	0.402		0.402	0.402		0.328	
Laborers (unsk.)	0.323		0.323	0.307		0.302	
Furniture making							
Cabinet makers	0.333 (0.333)		0.333	0.333		0.323	
Upholsterers	0.333 (0.333)		0.333	0.333		0.323	
French polishers	0.312		0.312	0.312		0.296	
Printing and bookbinding							
Hand compositors) Book &	0.344		0.333	0.333		0.318	
Machine compositors) Job	0.381		0.371	0.371		0.35	
Machine minders	0.344		0.333	0.333		0.318	
Bookbinders	0.344		0.333	0.333		0.318	
Laborers (unsk.)	0.28		0.27	0.27		0.259	
Food industry							
Bakers	0.30 d		0.307	0.307 d		0.318	

Industry and occupation	Amsterdam Rates	Amsterdam Earnings	Hague Rates	Rotterdam Rates	Rotterdam Earnings	Utrecht Rates	Utrecht Earnings
Electric power distribution							
Electrical fitter	$0.312	$0.344	$0.302 b	$0.318 bd		0.344	
Laborers (unsk.)	0.296	0.333	0.27 b	0.27 bd		0.302	
Transport							
Trams and busses							
Drivers	0.318 c	0.349	0.28 bc	0.291 bd		0.344 a	
Conductors	0.296 a	0.328	0.265 b	0.27 bd		0.344 a	
Cartage							
Motor drivers	0.2067 b		0.196 b	0.196 bd		0.249	
Horse drivers (1 horse)	0.2067 b		0.196 b	0.196 bd			
Railways							
Goods porters	0.201 b		0.20 b	0.201 be		0.233 b	
Permanent way laborers	0.222 b		0.20 b	0.2279 be		0.233 b	
Local authorities							
Laborers (unsk.)	0.275 b	0.312 b	0.265 b	0.233 ba		0.296	

a) Occupation not exactly corresponding to the denomination given in the table.
b) Average of two or more figures.
c) Average of figures for the two occupations indicated.
d) Average calculated on the basis of daily or weekly wages, divided by normal hours of work.
e) Average calculated on the basis of monthly or yearly wages, divided by total normal hours of work.

For some occupations, data have also been obtained on the basic time rates of piece workers and also of earnings of piece workers; these are given in parentheses.

APPENDIX III
THE DUTCH PRESS

Since 1940 the Dutch Press has been under German control, hence, the information given is as of May, 1940. Many of the smaller newspapers have discontinued circulation, supposedly because of paper shortage. The circulation, even of the larger newspapers, has decreased sharply since Nazi domination.

Name of Paper and Place of Publication	Owner or Editor	Approximate Circulation (in 1937)	Number of times Issued	Class appeal and Political Leanings
Algemeen Handelsblad (Amsterdam)	H.W. Planten (Dir.)	50,000	12 times a week morning and evening.	The wealthy, middle class, merchants, liberal with nationalist spirit.
De Courant-Nieuws van den Dag (Amsterdam)	F.H.J. Holdert (Dir.)	250,000	12 times a week.	A large circulation in Amsterdam, it is a non-partisan paper.
Haagsche Post (The Hague)	D.C. Bauduen(Ed.)	60,000	1 time weekly.	Publishes political, economic, and financial articles of a non-partisan character, it appeals to the intellectual class in all large cities.
Het Nationale Dagblad (Utrecht)	J. den Hobel (Ed.)	30,000	6 times a week.	National-socialist in character.
1/ De Nederlander (The Hague)	W. Hagenaar (Mgr.) F. de Redder (Ed.)	9,000	6 times a week.	Formerly edited by Dr. de Geer; it is the organ of the Christian Historical Party and has a circulation among the evangelical pastors and laymen.
Nieuwe Rotterdamsche Courant (Rotterdam)	H. de Bloeme (Dir.)	35,000	12 times weekly.	It is read internationally in trade and commercial circles, it aims at being the "Times" of Holland; carries much influence; it is national-liberal in character.

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Name of Paper and Place of Publication	Owner or Editor	Approximate Circulation (in 1937)	Number of times Issued	Class Appeal and Political Leanings
De Standaard (Amsterdam)	G.C. de Vlugt (Dir.)	24,000	6 times.	It is the organ of the ultra Calvinist party, i.e., Anti-revolutionary Party. Read in that circle, devoted to party propaganda and devotes much space to religion. The highly influential Prime Minister, Colijn, was a former editor.
De Telegraaf (Amsterdam)	F.H.J. Holdert (Dir.) J.M. Coedemans (Ed.)	100 to 120,000	12 times a week.	Liberal, jingoistic, plays up to the crowd, has largest circulation. Read especially by the middle class.
De Tijd (Amsterdam)	J.J.W. Boerigter and L.J. Stolhempter (Directors)		12 times a week.	An important Catholic organ, circulating principally in Catholic circles. Not as important as the Rotterdam Maasbode.
Het Vaderland (The Hague)	E. de Lang (Dir.) C.M. Schilt (Ed.)	12,200	12 times a week.	Liberal, owned by Nieuwe Rotterdamsche Courant. Read especially at The Hague.
Het Volk (Amsterdam)	Y.G. van der Veen (mgr.) S... Goedhuis (Ed.)	44,000	12 times.	Organ of Social Dem. Labor Party, anti-clerical, and has a wide circulation among working classes. Also availed of by leaders of the party for expressing their views on diverse social subjects.
Volk en Vaderland (Leiden)		90,000	1 time.	Official organ of Mussert.
Voorwaarts (Rotterdam)		45,000	6 times.	Social Democratic Labor Party organ. Read by party adherents especially in Rotterdam, Schiedam, Delft, Gouda.

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Name of Paper and Place of Publication	Owner or Editor	Approximate Circulation (in 1937)	Number of times Issued	Class appeal and Political Leanings
Haagsche Courant (The Hague)	J. Groenewegen (Dir.) H. Diemer (Ed.)	75,000	6 times.	Called itself independent; really leans to progressive conservatism. Popular journal read widely by middle and working classes.
1/ De Tribune (Amsterdam)		12 to 15,000	6 times.	Rabid, vehement organ of Communist Party; Marxist.
1/ De Maasbode (Rotterdam)			12 times a week.	Organ of the Roman Catholic State Party and of the hierarchy of the Roman Catholic Church. Most of the editorial staff were priests nominated by their bishops. It is the most important Catholic newspaper.
1/ Economische Statistische Berichten (Rotterdam)	Nijgh en van Ditmar (Pub.)		1 time.	Publishes very academic articles on economic policy and gave reliable information on commercial, industrial and financial matters.
1/ De Groene Amsterdamer (Amsterdam)		10,000	1 time.	Strong left in its editorial policy; found circulation among the intellectual class of Amsterdam and other large cities.

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Some of the minor publications and their affiliations.
(Many of these are Provincial)

Name of Paper and Place of Publication	Owner or Editor	Approximate Circulation (in 1937)	Number of times Issued	Class appeal and Political Leanings
De Banier (Rotterdam)		20,000	6 times.	Strongly Calvinistic; especially read in Provinces of Zeeland and South Holland; not as important as Standaard.
Dagblad voor Noord-Brabant (Breda)		40,000	6 times.	Appeals to Catholics in North Brabant; national-Catholic in character.
De Gelderlander (Nijmegen)		36,000	6 times.	Appeals to Catholics in and around Nijmegen.
Haarlems Dagblad (Haarlem)		20,000	6 times a week.	Circulates only in and around Haarlem; non-partisan; no outspoken tendency.
Leeuwarder Courant (Leeuwarden)		21,000	6 times.	Circulates over the whole Province of Friesland; it is the chief organ of that province; liberal.
Leidsch Dagblad (Leiden)		17,000	6 times.	Circulates among all circles in Leiden.
Limburger Koerier (Maastricht)		30 to 40,000	Daily with a second edition three times weekly.	Appeals to the Catholics of Maastricht in particular and all of Limburg; national Catholic policy.

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Name of Paper and Place of Publication	Owner or Editor	Approximate Circulation (in 1937)	Number of times Issued	Class Appeal and Political Leanings
Nieuwsblad van het Noorden (Groningen)		55,000	6 times.	It has no political attachment; supposedly non-partisan; it appeals to all classes in Groningen and Drenthe.
Oprechte Haarlemsche Courant (Haarlem)		20,000	6 times.	It has no outspoken political party affiliation.
Provinciale Noord-Brabantische en 's-Hertogenboschcr Courant ('s-Hertogenbosch)		20,000	6 times.	One of the chief papers of North-Brabant; it is an influential Catholic publication.
Provinciale Overijsselsche en Zwolsch Courant (Zwolle)			6 times a week.	Chief publication for the Province of Overijsael. It is neutral and liberal in its policy.
De Rotterdamer (Rotterdam)		34,000	6 times.	A Calvinistic publication devoted to the principles of the Anti-revolutionary Party and the Orthodox Reformed Church, but with no official affiliation.
1/ Utrechtsch Provincial en Stadelijk Dagblad (Utrecht)			12 times.	National-liberal in policy; has a wide circulation in the Province of Utrecht.

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News Agencies

Name of Paper and Place of Publication	Owner or Editor	Approximate Circulation	Number of times Issued	Class Appeal and Political Leanings
Algemeen Nederlandsch Persbureau (A.N.P.)	(Amsterdam and The Hague)			Independent; a cooperative agency of the Dutch Newspaper Union.
Algemeen Ned. Ind. Persbureau Aneta	(Batavia)			The Colonial news agency, formerly under the directorship of Colijn, the former Prime Minister.

1/ These newspapers are not listed in Sijthoff's Adresboek voor den Nederlandschen Boekhandel, 1941, indicating that publication had been discontinued by that time.

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APPENDIX IV

Some Leading Political Personalities

of the Netherlands.

1. MEMBERS OF THE NETHERLANDS CABINET IN LONDON

ALBARDA, J.W., Minister of Water Ways since 1939. Born at Leeuwarden, June 5, 1877. He graduated from the Polytechnical College of Delft, 1903, as a mechanical engineer. In 1903-4, he was a teacher of mathematics and physics at Almelo, and from 1905-11, he taught mathematics and mechanics at The Hague. In 1911 he was appointed director of the Municipal Labor Exchange, Amsterdam; and since 1913 member of Second Chamber as representative of Social Democratic Labor Party. He succeeded Troelstra as leader of Social Democratic Labor Party in 1925.

The Socialist Party for the first time accepted membership in a Netherlands Ministry in 1939, and Albarda became Minister of Water Ways, a highly technical and non-political Department. As an administrator and as a leader in the war cabinet he has been a disappointment. He is not likely to play a great role in the Netherlands after the war.

ANGEREN, J. R. M. van, Minister of Justice. Born at Utrecht September 5, 1894. He holds a Doctor of Law degree from the University of Utrecht. He entered the Department of Justice in 1921 advancing gradually until he became Secretary-General in 1937. He had previously been in charge of reorganizing the State Police and Investigation Department, as well as the River Police and the State Traffic Services. In 1935 he was a delegate representing the Netherlands at the Opium Conference of the League of Nations. His publications include: Administrative and Judicial Forms, The Lottery Law, and The Fire-Arms Law. On February 25, 1942 Dr. J. R. M. van Angeren

was appointed to the post of Minister of Justice.

van BOEYEN, H., Minister of Home Affairs and of General Affairs. Born May 23, 1889 at Putten (province of Gelderland). He became Town Clerk, 1915, He served in several administrative posts in the Post and Telegraph service from 1916-25. He was Alderman of the Municipality of Voorburg, 1919-25; Member of the Provincial Council of South-Holland, 1925-37; Member of a number of State committees on transport, finance, etc; and Minister of Home Affairs since 1939. He is a member of the Christian Historical Party and is a Knight of the Order of the Netherlands Lion. He had, in addition, assumed the duties of the Minister of War since Dijkhoorn left the Ministry of Defense. However, after January 6, 1942 the duties of the Minister of War were assumed temporarily by J. F. Furstner, the Minister of Marine, and the duties of the Minister of Home Affairs were assumed by G. Bolkestein during the absence of van Boeyen who has been obliged to take a rest.

BOLKESTEIN, Gerrit. Born at Amsterdam, Oct 9, 1871. He became a teacher in 1890. He became head of the High School at Amsterdam, 1912-1917, and Inspector of Secondary Education and High School Education, 1917-1937. He published several works on pedagogics and on the history of secondary education Bolkestein became Minister of Education, Science and Arts, in 1939. He is a member of the Liberal Democratic Party.

FURSTNER, K.C.B., Lieutenant-Admiral Johannes Theodorus. Commander-in-Chief of Netherlands Navy and Air Forces in European Waters, 1940. Born January 16, 1887. He attended the Naval College at Willemsoord, 1902-1906, Naval War College at The Hague, 1918-1920 and "Ecole de guerre Navale," Paris.

He entered the Netherlands' Navy, 1908 becoming Lieut.-Commander 1918, Commander, 1928, Rear-Admiral, 1936, and Vice-Admiral, 1938. In addition, he was Director of Naval War College, 1929-35, Commander of a battleship and Commodore of a Training Squadron, 1935, and Chief of Naval Staff at The Hague, 1936. He holds the Grand Cross of the Order of the Netherlands Lion; and is an officer of the Order of Orange Nassau. He was appointed Minister of Marine, June, 1941, and became Lieutenant-Admiral on Feb. 20, 1942.

GERBRANDY, Prof. Dr. Pieter Sjoerd. Born April 15, 1885. "Premier" and Minister of Coordination of Warfare. He is a graduate of the Amsterdam University. He entered the legal profession in 1911; held the posts of Professor of Law at Amsterdam University, 1930-39, Minister of Justice, 1939 and Prime Minister, September, 1940. Has been Minister of Justice and Minister of Colonies successively. The latter portfolio he relinquished to assume the new post of Coordination of Warfare on May 23, 1942. He was also Chairman of the Netherlands Broadcasting Council. His publications include: Homestead Exemption Law (thesis 1911); The Agreement of London, 1924; The Struggle for a New Social Order, 1927; The Legal Aspect of Broadcasting, 1933; The Civil Code and Administrative Law, 1938. He is a member of the Anti-revolutionary Party (conservative protestant) and a Knight of the Order of the Netherlands Lion.

Gerbrandy was an unknown political quantity when he entered the cabinet in August, 1939, but he has emerged from the crisis as the strongest man, after the Queen, in the Government. He has vigor and determination.

He will undoubtedly continue as a political leader after the war.

TEMPEL, J. van den, Minister of Social Affairs. Born August, 1877 at Willemstad, Noord-Brabant. Trained by his father to be a painter. He left this job to enter the Rotterdam Technical College. He received his doctorate from this college in 1927. His dissertation was entitled Power and Economic Law. He had always been politically inclined and socially minded as can be ascertained from the record of his achievements. In 1900 he was chairman of the strike committee of the painters' union. From 1906-1918 he was secretary of Netherlands Union of Trade Societies. He was member of the Amsterdam city council from 1910-1919 and again from 1927-1932. From 1910-1914 he was leader of the Social-Democratic party. From 1915-1939 he was a member of the Second Chamber of the States-General. During his membership in the Second Chamber he headed many commissions dealing with labor and industry and he was the sponsor of much important social legislation. He is a rather prolific pamphleteer, being author of the following works: Netherlands Trade Unionism and its Future, Capitalism and Public Income, Problems of Socialization, and a novel, Jacqueline Vrijlieff. He was appointed Minister of Social Affairs in 1939.

KERSTENS, Pieter A., Minister of Commerce. Born at Ginneken in Noord-Brabant, August 23, 1876. Trained for pedagogy and taught in The Hague for seven years before going to the East Indies in 1926. In 1928 he was secretary of the Central Board of the Catholic Social Societies in the Netherlands Indies. In the Indies he became editor of Social Leven en Streven. Since 1931 he was East Indian correspondent for the Catholic Maasbode; President of the Indian Catholic party; and since 1935, member of the People's Council and of the College of Deputies. He is the author of numerous articles in the Dutch

press, and among his publications are: Manual of Dutch Letters and Catholic Literature since the Reformation. He is also the author of a voluminous brochure entitled The Economic Group in Sheepsclothing, which is a statement of a political and economic philosophy of liberalism. On November 20, 1941. he was appointed to the position of Minister of Commerce, and after a hazardous trip from the Indies he arrived in London to assume office on January 8, 1942.

VAN KLEFFENS, Dr. E. N., Minister of Foreign Affairs. Born November 17, 1894 at Heerenveen. He received the degree of Doctor of Law at Leiden University, 1919, writing a thesis on: "International legal relations between the Netherlands and Japan from 1605 until today." He was attached to the Secretariat of the League of Nations, 1919-1920; Board secretary of the Royal Dutch Shell in London, 1921-22; Assistant director of the Juridical Section of the Netherlands Foreign Office, 1922-27; Assistant-director of the Diplomatic Section of the Netherlands Foreign Office; Director of the Diplomatic Section, 1929-39. He was also Envoy Extraordinary and Minister Plenipotentiary at Berne (Switzerland), 1939 and Minister of Foreign Affairs, 1939. He acted as Recorder to the Tribunal for the interpretation of the Dawes and Young plans and as Secretary-general of the Academy of International Law at The Hague. He is a Knight of the Order of the Netherlands Lion. He has no real party affiliations.

Van Kleffens is highly regarded as a specialist on foreign relations, but he lacks the qualities for political leadership.

VAN MOOK, Hubertus J. Born May 30, 1894 at Semarang, Java. His education and work experience include: High School, Soerabaia, Java; Student, University of Amsterdam; Technical School, Delft, studied chemistry; studied for East Indies Civil Service, Leiden University; entered East Indies Civil Service, 1919; doctor's

degree in Indological Studies, Leiden University, 1928; Member of the Volksraad, 1931-34; Director Department of Economic Affairs, 1934- ; Head of Netherlands Indies delegation to Institute of Pacific Relations Conference, Yosemite Park, California, 1936. He was Chief of Netherlands delegation at Netherlands Indies-Japanese trade conference, 1940-41. He was appointed Minister of Colonies, Netherlands government in London, November 22, 1941, but did not take office. He became Lieutenant Governor-General of the Indies, January 1, 1942. After appraising the situation, he came to the U.S. on an urgent mission in January, 1942. Van Mook left Java just before its fall, set up Netherlands War Board in Australia, and then went to the United States and London in May, 1942. On May 23, 1942 he was appointed to the post of Minister of Colonies.

Van Mook is a member of a group, or society, of progressives which published the journal De Stuw. He was appointed by the Governor-General to represent this group in the Volksraad, 1929-1934. He has a reputation for absolute honesty. His intellectual interests are history and economics. He is very interested in meeting people and enjoys participation in small discussion groups. He speaks English like an American.

Van Mook is certain to play a leading role in the post-war Netherlands Empire. He has ability, courage, imagination and determination.

SOEJONO, Raden Adipati Ario. Member of the Council of the Netherlands Indies; on June 9 was appointed Minister without Portfolio in the Dutch Cabinet in London. Raden Soejono is the first Indonesian to hold a ministerial post in the Dutch government. He is a member of an old regent family of Java and was himself, for a number of years, Regent of Pasoeroean. Later he became a member of the Indies legislative body, the Volksraad, and of its College of Delegates. His public activities have not been confined to the Indies. He has served as technical adviser to the Dutch delegation

to the International Labor Conference, as a deputy member of the Netherlands delegation to the League of Nations Assembly and, from 1935-1940, Dutch representative on the International Tin Committee. In 1940 he was made a member of the Council of the Indies. With Lieutenant Governor-General Van Mook and thirteen others he left Java in March just before it fell.

2. OTHER POLITICAL PERSONALITIES.

Hendrik Colijn — The most outstanding figure in Dutch political life during the past quarter of a century has been Hendrik Colijn, leader of the Anti-revolutionary Party. He has had an intensely interesting, crowded and varied career. He was born of lower middle class parents. As a young man he went to the Indies as a soldier and distinguished himself for bravery and as an administrator. General van Heutsz, to whom goes the credit for bringing the long and costly Achehnese war to a close, recognized Colijn's abilities and made him his aide. When van Heutsz was made Governor-General in 1904, he directed Colijn to make a survey of the Outer Islands and to draft a plan for the civil government of this vast area. In this work Colijn came to know the outlying islands as no one else at the time did, and his report was a statesmanlike document.

In 1907 he resigned his position in the Indies to join the staff of the Royal Dutch Shell under Deterding. This phase of his career was interrupted, however, by two years' service as Minister of War (1911 - 1913). As Minister of War he reorganized the army and the militia. During the years of the World War, when the supply of oil was so important, Colijn was director-manager of the Batavian Oil Company, Far Eastern subsidiary of the Royal Dutch Shell. In these years he made his home in London, returning periodically to Holland, however, for he was a member of the First Chamber. As a result of his connection with the Royal Dutch Shell during these years, Colijn amassed a comfortable if not a large fortune.

Upon the death of the great Kuyper in 1920, Colijn was chosen as Kuyper's successor as the leader of the Anti-revolutionary Party and as the editor of the Anti-revolutionary

daily, De Standaard, published in Amsterdam. Colijn has been the power and Minister President of no less than five cabinets, though his last one, that of August, 1939, lasted only 48 hours. He was prime minister throughout the difficult years of the depression and pre-war years, 1933 to 1939. He is regarded as an able public financier. He came to be regarded as the "strong man" of Holland and pulled a vote for his party far beyond its normal strength. He has served on nearly every important public commission during the past 25 years. For years he served as chairman of the Zuider Zee Reclamation Project Council.

Colijn acquired a world reputation for his labors on behalf of international economic cooperation. He was chairman of the Second Commission of the World Economic Conference held at Geneva in 1927 under the auspices of the League of Nations, and chairman of one of the Sections at the London Economic Conference in 1933. He has always been an ardent advocate of low tariffs and international economic cooperation. He also gave leadership to the movement for close cooperation among the Oslo States.

After the liberation many of his countrymen will turn to Colijn for leadership, and yet it is doubtful whether he will be able to assume the leadership of post-war Holland. The Catholics have come to view him with great hostility. His age (73 years) is also against him. Moreover, after the German invasion he suffered a brief collapse of morale. Always impetuous, he soon had in circulation a pamphlet in which he stated that the democratic front against Germany had collapsed, that Holland could not hope for deliverance, and that therefore nothing remained for the Dutch but to accept the situation. However, he quickly recovered and took the leadership in organizing a union of all the democratic parties for resistance to the introduction of Nazi ideology and practices in Holland.

He also made public speeches encouraging his countrymen to cling tenaciously to their spiritual heritage. As a reward for his pains the Germans first placed him under "protective arrest" and later clapped him in prison.

He remains one of Holland's greatest men. He is a man of extraordinary ability along many lines, and a person of great force and character. He may possibly play an important role, if not the leading role in post-war Netherlands. At the time of the invasion he was easily the most outstanding Dutch political figure.

Jonkheer D. J. de Geer. He is probably the most tragic figure in Dutch political life of the last century. He was Minister President at the time of the German invasion and is now denounced by his former colleagues as a traitor and a tool of Hitler.

When Colijn failed in his last attempt at forming a ministry in August, 1939, the Queen called on de Geer, who was the leader of the Christian Historical Party. De Geer succeeded where Colijn failed, probably chiefly because the Catholic group was willing to give him cooperation but not Colijn. By taking Catholics and Socialists (2 each) into his cabinet, he secured the support of the two largest parties in parliament, besides his own and a couple of other small parties.

De Geer epitomized the traditional Dutch policy of isolation and neutrality. He has been characterized as "the man of the neutral mentality." His first radio speech in London addressed to his fellow countrymen deeply shocked the British and his colleagues. He urged the Dutch at home to obey the German "occupation". In Dutch circles in London it was derisively said "Our premier is still neutral." Reluctantly he accompanied the Dutch cabinet to London. He did not lead;

he followed. He felt that his duty was with the people in Holland.

He had to make war, yet his heart was not in it. The Queen and the cabinet, on the other hand, took the position that war for liberation was the first duty and that every sacrifice must be made to wage it to the utmost. He was finally pushed out of the cabinet, though publicly his going took the form of resignation for reasons of ill health. He was embittered. He wanted to leave London. After giving solemn promises to his colleagues and to the British he was entrusted with a mission to the East Indies. Unfortunately, he had to wait a long time in Lisbon for a plane to the Indies. His stay lengthened into weeks, months. British and Dutch suspicions were aroused; new pledges were demanded and received. In spite of his pledges, he finally took a plane to Amsterdam. He was immediately denounced by his former colleagues in London as a traitor, and in a broadcast to the Netherlands, the Dutch government in London warned the people against him.

For over a year de Geer lived quietly as a private citizen in Holland. But a few weeks ago (mid-April, 1942) reports came out of Holland that he had written a pamphlet, whose specific content is not yet known here but which apparently was in Oxford group style, carrying the assurance that all would come out well. The Dutch government in London immediately branded him as a tool of Hitler and warned his countrymen against him. But Mussert, the leader of the Dutch Nazis, has bitterly attacked de Geer and his pamphlet. What this all adds up to it is difficult to say. It may mean that Mussert sees in the incident a German move to use de Geer rather than himself as a "Quisling." Mussert has little following and holds the respect of even fewer. The respectable

de Geer would serve the German purpose far better than Mussert.

Whatever the correct answer to the riddle may be, de Geer, in spite of his age, or because of it, has potentialities which must be watched.

Jacob A. de WILDE. Born January 7, 1879 at Goes. He attended the Free University of Amsterdam, enrolled first in the liberal arts and later in law. He became a lawyer at Goes where he practiced until 1908.He then moved to The Hague. De Wilde entered politics and headed several important commissions. He was a member of The Hague city council representing the Anti-revolutionary Party. From 1919-1923 he was residence deputy of finances and from 1923 to 1931 the deputy of finances. In 1918 he became a member of the Second Chamber and retained this membership until 1933. He was next appointed Minister of the Interior in 1933 and in 1937 he was appointed Minister of Finance. He is an important political personality, having held many responsible posts in the party and in government. He remained Minister until 1939. He has been imprisoned by the Nazis.

Lieutenant General Henri Gerard WINKELMAN. Born at Maastricht, August 17, 1876. He was placed in supreme command of the Dutch troops after the resignation of F. H. Reynders on February 5, 1940. Winkelman had left active service in 1934 after having been Chief of staff and Commander of the 4th Division. He is known as one of the ablest and most exacting of army officers and a very capable administrator. After the surrender in May, 1940 he was allowed freedom. However, when General Winkelman exposed the incriminating German "white book" as a fraud he was imprisoned, and it has been learned in London that he is imprisoned in Bohemia.

TELDERS, Benjamin M. Born at The Hague, March 19, 1903. He studied law at University of Leiden and at Ecole des Hautes Etudes Internationales, Paris and received the Doctor of Law degree from Leiden in 1927. He is on the Board of Editors of several periodicals and he is an author of note on legal matters. In 1937 he was appointed professor of law at Leiden University. He is recognized as one of Leiden's most brilliant scholars. He was arrested by the Nazis for his defense of Prof. R. P. Cleveringa, his colleague, who, in November, 1940, had publicly denounced the Germans for dismissing the famous Jewish professor, E. M. Meyers.

BALLUSECK, Daniel J. von. Born at Utrecht March 3, 1895. He was educated at the Rotterdam Technical College, and University of Geneva. Editor of Algemeen Handelsblad, Amsterdam. He was one of those arrested along with Colijn. A veteran foreign correspondent. Represented Algemeen Handelsblad in New York City, 1920-1924. One of most outspoken journalistic foes of the Nazis in the Netherlands. He was attached to Netherlands Consulate General in London, 1914-1916. In ensuing years he was correspondent of the Algemeen Handelsblad in London, Paris, and other cities. He has been chief editor since 1929.

Beelaerts van BLOCKLAND, Jonkheer Frans. Born January 21, 1872 at the Hague. He holds the degree of Doctor of Law from Leiden University, 1895. He was Director of the Post and Telegraph

Service, 1897; Recorder of Second Chamber, 1902; Envoy Extraordinary and Minister Plenipotentiary to China, 1909-1919; Director of the Political Section of Netherlands Foreign Office, 1919-27; Delegate to Washington Conference, 1921-22; Extra Lord-in-Waiting to Queen Wilhelmina, 1926; Minister of Foreign Affairs, 1927; and Envoy Extraordinary to Brussels, 1927. Since 1933 he has been Vice-President of the Privy Council and Minister of State, 1936. He is a member of the Netherlands High Court of Nobility, holds the Grand Cross of the Order of Orange Nassau, and is Commander of the Order of the Netherlands Lion. At present he is with the Dutch government in exile in London.

DIJK, J. J, C. van. Born at Leeuwarden, December 1, 1871. He graduated from the military school at Haarlem, becoming an officer in 1892. He became instructor in the military school at Haarlem and later, a teacher in the Royal Military Academy, Breda, which post he held until 1908. In 1913 he became Director of the topographical division of the Department of War. He entered the cabinet in 1921 as Minister of War and also became acting Minister of Marine. In 1925 he was a member of the Second Chamber. In 1937 he entered the Colijn cabinet as Minister of Defense. He was a member of many civil and military commissions of importance. Early in July, 1941 the former Minister of Defense was imprisoned with the round-up of 60 prominent political personalities.

GOUDRIAAN, Jan. Born on December 5, 1893, at Amsterdam. Graduate of the Technical College at Delft in 1915 and in 1922 received his doctorate from that college. From 1916-1923 he was appointed to several labor commissions. In 1925 he became chief engineer of "Feyenoord" at Rotterdam. He served as professor at the Netherlands Technical College, Rotterdam. In 1928 he became

a director of the Philips Electric Company at Eindhoven. In 1938 he was appointed Director of Dutch Railroads. He served, in addition, on many commissions and also was professor of industrial arts at the Technical College at Delft. He is the author of many articles and several books. In June, 1940 he was placed in a concentration camp for refusing to deliver to the Germans the coaches of the royal train. A strike among railway workers threatened and was only averted when a false report was circulated that Goudriaan had been released. He had been a member of the Dutch Socialist Democratic Party, but 5 years before the war he resigned because he did not approve of the party's attitude toward defense and because it would not pay attention to his warnings that Germany was a threat to the Netherlands. He played a political role in the Netherlands by establishing a new party called Unity by Democracy which became rather important. In June, 1941 he was released from concentration camp and given his former important position, but on December 10, 1941 he resigned this post.

DIXHOORN, A. O. Born at Rotterdam, 1889. His military education and advancement included: 1908, cadet Royal Military Academy, Breda; 1914, first-lieutenant; 1927, captain; 1936, major; 1938, lieutenant-colonel; 1940, colonel; 1920-23 studied strategy at Military College at The Hague; 1927-29 detailed "Ecole Superieure de Guerre.". From 1929-33 he was the Director of the Division "General Staff" of the Ministry of Defense. He is a Knight of the Order of Orange-Nassau and has no definite party affiliations.

Retired as Minister of Defense in May, 1941. At present he is in the United States on a military mission.

STEENBERGHE, Dr. Maximilien Paul Leon. Born May 2, 1899 at Leiden. He holds a degree of Doctor of Law from Utrecht University (1920). He held several industrial managements, 1921-34, and was a member of the High Social Council, Netherlands Employment Advisory Commission, Industrial Council, Council of Statistics, etc. Steenberghe was a delegate to the Economic League Conference (Geneva) 1927. He was chairman of the Catholic Employers' Association, 1930-34; he is a member of the Catholic State Party, an officer of the Order of Orange Nassau, and a Knight of the Order of the Netherlands Lion. Steenberghe was Minister of Economic Affairs 1937-1941. He retired from the ministry in November, 1941 after he had a difference with the prime minister over the latter's authority. He is now in Washington (July,1942) in charge of Dutch shipping.

He may have a great deal of influence in post-war Holland. He represents the younger and more liberal Catholics and has the reputation of an able administrator and clever political leader.

WELTER, Charles Joseph Ignace Marie. Born April 6, 1880 at The Hague. He studied Indology at Delft University. He entered Netherlands East Indies Civil Service at Java, 1902 and became General Secretary to the Governor of the Netherlands East Indies, 1921-24. He held many important posts in the Netherlands East Indies government. He was a member of Parliament in Holland as a member of the Catholic State Party. He is a Knight of the Order of the Netherlands Lion and Grand Officer of Orange Nassau. He had been Minister of Colonies and ad interim Minister of Finance. He retired from the ministry in November, 1941, after a difference with the prime minister over the latter's authority. He is now representative of the Netherlands Government in India. Welter's political influence is a thing of the past. His last years have reflected no great credit on him and he is politically dead.

3. SOME DUTCH NAZIS

Anton Adriaan Mussert.

Mussert is the Dutch imitation of Hitler. He was born on May 11, 1894 and was educated as a civil engineer at the Delft Technical School, having been graduated in 1918. From 1918 to 1920 he was an engineer with the national Department of Waterways, participating in the construction of the Ijmuiden locks. From 1920 to 1927 he was with the Department of Waterways, Province of Utrecht, as an engineer, and from 1934 to 1937 he was chief engineer for the same.

He began his political career as organizer and general secretary of the National Committee against the Netherlands-Belgian Treaty, 1925-1927. In 1931 he organized the Netherlands National Socialist Movement. In August, 1935 he visited the East Indies and reorganized the Nazi movement there. In 1937 the government demanded of Mussert that he either cease his political activities or resign his position. He resigned. Since that date he has devoted all his time to his Nazi movement. A "Brown House" was established at Utrecht. When two weeks before the invasion the Netherlands government declared a state of martial law and arrested a number of Dutch Nazis, Mussert remained free.

Mussert's party has never had a large following. Its representation in the Second Chamber never exceeded 4 under a system of proportional representation, which means that the Nazi's polled a vote of about 4% of the total.

Since the German occupation Mussert has occasionally shown dissatisfaction with the German authorities for not giving him a position of authority. Other Nazis, lesser lights, have been given positions as commissioners of provinces, as secretaries-general of departments, and as mayors, and his chief rival, Rost van Tonningen, has been given a position of great

authority and power, but so far Hitler has given Mussert nothing, save recognition as the leader of the sole political party permitted to function in Holland. He is so disliked by the Dutch that his appointment to any post would cause a major disturbance.

Tonningen, Rost van. Born February 19, 1894, at Soerabaja, Java.

His education and work experience include: studied 2 years at Delft Engineering College, then transferred to Leiden, where he was graduated in law, 1922; Secretary to Chairman of the Norwegian-American Arbitration Commissions, 1922; Secretary to the Commissioner General of the League of Nations in Austria (Zimmermen), 1923-26; representative of the chairman of the financial committee of the League of Nations, 1926-28; chief, research section, of the banking firm Hope and Co., Amsterdam; representative of the Council of the League of Nations at Vienna, 1931-1936; since 1936 chief editorial writer of Het Nationale Dagblad, chief organ of the National Socialist Party of Holland; elected member of the Second Chamber on National Socialist ticket, 1937; 1940, Secretary-General, Department of Finances; 1941, President, Bank of the Netherlands.

His career and private life: While in Vienna he was used by Dolfuss for confidential missions to Berlin and Rome--these glimpses behind the scenes of world politics went to Rost's head. He maintained the confidence of Dolfuss until the latter's death. However, Schussnig distrusted him, relegated him strictly to his position of League adviser. Mussert dislikes him, probably fears him, since he has much more ability than Mussert. Tonningen is unstable; in parliament his behavior was characterized by insolence. Apparently he made an impression on Seyss-Inquart, the Austrian who is at present Reich Commissioner in the

Netherlands. He is "a hysterical worker, having alternate periods of intense activity and complete collapse." His influence in the Nazi movement is somewhat curtailed by an alleged Eurasian admixture in his blood, which his appearance seems to substantiate.

BLOKZIJL, Max. Born at Leeuwarden, December 20, 1884. He was educated at the High School-The Hague. He joined the editorial staff of Algemeen Handelsblad, 1903, and was its traveling correspondent in 1908-1914, travelling through Europe, Netherlands Indies, China, Japan and Siberia. In 1914 he became war correspondent for the Algemeen Handelsblad with armies of Central Powers. Since 1919 he was Berlin correspondent of Algemeen Handelsblad; Blokzijl is the organizer and former president of Netherlands Alliance in Germany and former chairman of the Union of Foreign Press in Berlin. Since 1930 he was representative of the latter society in the Executive Committee of the International Federation of Journalists. He is the author of adventure stories and a composer. The Nazis made him editor of De Standaard as successor to Colijn, 1941. The paper declined rapidly under him and he therefore was removed as editor. Has since been chief Nazi broadcaster over the Dutch radio.

DAL, Jan van. A Dutch Nazi elevated to rank of Secretary-General of Education. He was born at Amsterdam, October 3, 1896. He is a graduate of the University of Amsterdam, receiving a doctorate in German language and literature. In 1920-1922 he was a lecturer at the University of Bonn, and from 1922-1925 he was instructor at the Amsterdam Technical High School. In 1925 he became instructor of German language and literature at the University of Amsterdam. From 1929-1936

he was professor of Gothic and old Germanic language and literature, and in 1936 he was professor of Old German and German philology at the University of Amsterdam. He is the author of many books in his field of research. He was appointed Secretary-General of Education and given dictatorial powers over the whole field of education by the Nazis.

KREKEL, H. A former journalist associated with the liberal daily Het Vaderland at The Hague; he wrote chiefly on foreign politics. He was converted to totalitarian view, and, as the result of an article expressing admiration for the Nazi cause, he was dropped from the Het Vaderland staff. He then issued a private weekly news letter in which he aired his views. Immediately upon the invasion he was made editor-in-chief of the former liberal Haagsche Post. He is a member of the Mussert party. On July 25, 1941 he was nominated to the chair of Professor Extraordinary of History in the historic University of Leiden.

LOON, Johannes van. Born September, 1888 at Veere. He was educated for a teaching career at the normal school at Thelen. In 1917 he entered the University of Leiden as a law student. He became a lawyer in The Hague in 1919. In 1920 he became legal adviser of a large pharmaceutical concern in Deventer, a post he still retains. He became a special instructor at the Technical College at Delft and later professor at the University of Utrecht and the Technical College at Delft. He is a member of many legal-industrial commissions. He became a specialist in international law. Van Loon was associated with the German Academy for German Law in Berlin and the University of München. He is the author of many articles and books on legal subjects. He was known as a Nazi friend long before

the invasion. In 1941 he was appointed president of the Supreme Court by Reichscommissioner Seyss-Inquart. He is president of the newly formed Social Economic League of the Netherlands and Europe.

POSTHUMA, Folkert E. Born May 20, 1874 at Leeuwarden. He is a graduate of the Agricultural College at Wageningen (1893). From 1896-1898 he attended the agricultural college at Halle, Germany . He became secretary of the Union of Co-operative Dairy Products Concerns in Friesland and later a consultant on the dairy products industry in Drenthe. From 1905-1909 he was secretary of the Dutch Dairy Products Union. During the first World War he was Minister of Agriculture thus holding a prominent position in the field of agriculture and in the field of food regulation. Through his many activities his contact with the Germans became very close and he developed an admiration for their methods. This became evident long before the invasion. After the invasion he became the organizer for the Nazi-controlled Agrarian Front and head of a special commission on agricultural planning, and it is reported that he is the general advisor of the Landstand which has complete control of the Dutch food production and supply.

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APPENDIX V

Statistics for Agriculture in the Netherlands

TABLE I - LAND USE IN THE NETHERLANDS 1938-1939

(Latest Available)

Land Use:	Acreage 1,000 acres	Percentage of Distribution of Cropland	Percentage of Distribution of All Land
Grain:			
Wheat	311	13	4
Rye	601	25	7
Barley	107	5	1
Oats	369	15	5
TOTAL	1,388	58	17
Forage Crops:			
Feed roots	127	5	1
Hay and Green feed	73	3	1
Rotation pasture	48	2	1
TOTAL	248	10	3
Food Crops:			
Potatoes	224	9	3
Peas and beans	126	5	2
Sugar beets	108	5	1
TOTAL	458	19	6
Industrial crops:			
Flax	51	2	1
Potatoes for starch manufacture	76	3	1
TOTAL	127	5	2
Other cropland including gardens	180	8	2
TOTAL CROPLAND	2,401	100	30
Permanent meadow	3,200		39
Fruit	223		3
Woodland	639		7
Other Land	1,723		21
TOTAL AREA	8,185		100

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TABLE II - NUMBER OF LIVE STOCK IN NETHERLANDS, 1938-1939

(Latest Available)

	1938	1939
Live Stock	1,000's	1,000's
Cattle	2,763	2,673
Horses	312	322
Sheep	654	690
Goats	--	--
Hogs	1,538	1,553
Chickens	29,696	32,805
Ducks	875	1,022

TABLE III - NETHERLANDS PRODUCTION OF DAIRY PRODUCTS AND MARGARINE

1937-1938

Product	1937 Million lbs.	1938 Million lbs.
Butter	221	222
Cheese	227	277
Milk (condensed)	385	348
Milk (powdered)	62	63
Margarine	154	161

About 1/2 of the butter, cheese, and condensed milk are exported, 39% to Great Britain, 11% to Germany.

TABLE IV - AGRICULTURAL IMPORTS OF THE NETHERLANDS

(average, 1936-38)

Product	Quantity 1,000 lbs.	Value $1,000
Meat	26,810	2,774
Grains	2,048,924	24,683
Wheat	1,236,222	22,728
Rye	139,976	1,895
Oats	95,421	,297
Oilseeds		
Linseed	697,564	184,047
Peanuts	337,534	9,459
Soybeans	224,701	3,991

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Copra	129,416	3,872
Palm Kernel	79,383	1,928
Oil Meal and Cake		
Linseed Cake	129,557	2,112
Coconut Cake	80,860	1,264
Peanut Cake	75,538	1,216
Soybean Cake	35,432	564
Other Products		
Cotton	121,777	15,065
Tobacco	66,126	11,140
Commercial Fertilizer		
Saltpeter (natural)	145,562	2,289
Saltpeter (other)	183,786	2,868
Potash (1938 only)	972,729	8,465
Phosphate	1,059,277	5,026

TABLE V

AGRICULTURAL PRODUCTION - 1937-1938 (Latest Available).

Tubers and Bulbous Crops	1937	1938
Chicory	2,624,664,000 lbs.	35,497,624,000 lbs.
Sugar beets	348,655,168,000 "	3,348,984,612,000 "
Potatoes (starch)	30,046,838,000 bu.	40,441,793,000 bu.
Potatoes (food)	81,277,942,000 "	80,009,437,000 "
Commercial Crops		
Linseed	26,976,960,000 lbs.	36,341,756,000 lbs.
Flax	195,351,540,000 "	261,725,000,000 "
Caraway seed	12,985,968,000 "	1,244,158,000 "
Winter cabbage seed	11,090,528,000 "	13,398,116,000 "
Pulse		
Shelled beans	35,413,872,000 "	17,140,503,000 "
Peas	185,136,000,000 "	228,431,376,000 "
Beans	74,094,072,000 "	55,457,048,000 "

Grain		
Hay	783,733,584,000 lbs.	984,198,404,000 lbs.
Summer wheat	157,762,320,000 "	144,357,592,000 "
Winter wheat	123,644,400,000 "	163,254,688,000 "
Rye	1,089,968,364,000 "	1,223,347,832,000 "
Oats	753,159,696,000 "	955,932,104,000 "

APPENDIX VI

Coal Mining Statistics for the Netherlands

The latest available statistics are for 1938. The general uncorrected figures for 1939 indicate a very slight decrease in coal mining activity.

Table I Production of the Various Mines.

Dry and semi-bituminous collieries (largely house coal)

	Tons
Wilhelmina State mine	1,438,216
Domaniale (also anthracite)	901,511
Willem (also anthracite)	503,000
Laura	790,800
Julia	758,100
Orange Nassau I	621,070
II	782,311
III	1,021,584
IV	505,376
Total	7,321,968-51%

Bituminous coal mines (largely coking and industrial coal)

Emma State mine	2,526,930
Hendrik State mine	1,669,316
Maurits State mine	2,803,055
Total	6,999,301-49%
Grand Total	14,321,269

Table II. Average number of Workmen Employed by each Mine.

Wilhelmina State Mine	2,800
Emma State mine	5,628
Hendrik State mine	3,703
Maurits State mine	7,325
Total	19,456

Domaniale	2,002
Willem	1,302
Laura	1,313
Julia	1,400
Orange Nassau I	1,707
II	1,141
III	1,951
IV	797
Total, Private.	11,613
Total All Mines	31,069

Of these, 20,118 worked under and 10,951 above ground.

Table III. Number Employed compared with Neighboring Countries.

Westphalia	225,000
Belgium	125,000
Netherlands	31,069

Table IV. Names of Mines and Depths of Shafts.

Wilhelmina State mine	1,722 ft.
Emma State mine	1,886 ft.
Hendrik State mine	2,420 ft.
Maurits State mine	2,280 ft.
Orange Nassau mine I	1,194 ft.
II	1,181 ft.
III	1,378 ft.
IV	1,673 ft.
Domaniale mine	1,614 ft.
Willem-Sophia mine	1,942 ft.
Laura mine	1,198 ft.
Julia mine	1,251 ft.

Table V. Comparative table of the output per worker per shift.

Country	Pounds per worker per shift
Netherlands produced	3,908.8
Germany (Ruhr	
Germany (Aix la Chapelle	3,585.9
France	1,875.9
United Kingdom	2,616.1
Belgium	1,703.7
Poland	3,999.0

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APPENDIX VII

STATISTICS ON FISHERIES

The comparative figures for 1938 and 1939 are given in order to indicate a representative figure since 1939 was an abnormal year with diminished yields.

TABLE I- Total Yield from all Fisheries

	1938		1939	
	Weight in Tons	Value	Weight in Tons	Value
Sea fisheries	151,266	$8,251,150	77,110	$6,110,900
Coast fisheries	97,334	2,480,500	111,223	2,321,930
River fisheries	530	40,150	377	27,090

TABLE II - Principal Kinds of Sea Fish Landed

	1938 Tons	1939 Tons
Herring (immediately pickled on board boat)	82,164	31,621
Herring (fresh)	24,246	10,764
Plaice	9,050	8,186
Sole	1,559	1,711
Haddock	8,451	6,589
Cod	6,117	4,294
Turbot	957	746
Mackerel	7,640	3,006
Dab	2,004	2,310
Whiting	3,124	3,055
Coalfish	2,378	2,252
Other	3,444	2,599

TABLE III - Principal Kinds of Coast Fish Landed

	1938 Tons	1939 Tons
Eel	3,104	2,581
Mussels	67,208	71,990
Oysters	935	1,024
Pike-perch	140	2,933
Shrimp	3,352	3,097
Small fry	17,423	26,541
Achovy	397	320
Smelt	622	284
Herring	1,347	13
Others	2,801	2,425

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APPENDIX VIII

Iron Foundries in the Netherlands

	Firms	No. employed
Province of Gelderland,	10	2219
of which: Groningen	2	786
Wisch	2	710
Epe	1	282
Doetinchem	1	74
Province of North Brabant,	12	1398
of which: Bergen op Zoom	5	827
Breda	3	470
Province of Overyssel,	6	712
of which: Zwolle	1	140
Deventer	2	497
Province of North Holland,	5	230
of which: Amsterdam	2	156
Province of Limburg:	9	355

There are 4 steel foundries in the Netherlands, one at Zuilen, near Utrecht, employs 606, and a smaller one at Ridderkerk (South Holland) with 142 employees. A new furnace was opened in 1939 at Ijmuiden and a new furnace was opened at Delft in 1939 for the manufacture of steel from scrap.

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APPENDIX IX

Important Iron and Steel Working Firms in the Netherlands

Province and Town	Imp. Iron & Steel Working Firms & Payrolls. (Payrolls placed in parentheses.)
Province of S. Holland	
Rotterdam	4 construction shops (491); 9 machine works (2690); 28 shipbldg. yds (8733); 2 bulb & radio tube works (45)
The Hague	2 railroad and street car shops (245)
Leiden	2 construction shops (452)
Dordrecht	1 weapon and munition factory (116), 1 safe factory (710) 1 construction shop (405) 6 ship yds. (590) 2 electrotechnical factories (286)
Schiedam	1 iron and steel bolt pin and peg works (93) 2 construction shops (359) 5 ship yards (3003)
Delft	3 construction shops (912), 1 machine works (431)
Province of N. Holland	
Amsterdam	2 iron foundries (156), 1 type foundry (233), 1 electric cable works (939), 2 boiler works (278), 8 machine works (3460), 44 ships yds. (4751), 2 railroad and streetcar shops (410), 1 airplane factory (303)
Haarlem	2 machine works (683), 6 ship yds. (662), 2 railroad and streetcar shops (1356), 7 wagon and carriage works (504)
Hilversum	3 electric cable works (1989)
Province of Utrecht	
Utrecht	6 machine works 940, 3 railway and streetcar shops (1055), 7 electrotechnical factories (752)
Province of Friesland	
Leeuwarden	1 tin ware factory (96)
Province of Overyssel	
Zwolle	1 iron foundry (140), 1 railroad and streetcar shop (1060)

APPENDIX X

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THE NUMBER AND PERCENTAGE OF PERSONNEL IN THE NETHERLANDS IRON & STEEL WORKING INDUSTRY ACCORDING TO PROVINCES

	Ship-building yard	Machine Works	Machine repair shops	Construction shops	Railway & Street-car works	Wagon & Carriage	Wire & wire nail	Plate war factories	Boiler works	Screw & bolt factories	Tempered bolt & ratchet works	Iron & Steel bolt pin & pegworks
Employed	33,201	16,344	2,490	4,798	7,306	4,558	366	2,982	590	895	468	221
of which in:												
S. Holland	59.0	28.0	25.7	83.9	10.9	28.9	5.7	30.3	6.4	15.8	41.5	42.1
N. Holland	21.8	29.3	16.6	1.8	24.1	20.0	5.7	48.1	69.2	--	--	--
N. Brabant	2.0	6.6	8.4	--	18.8	2.9	65.0	2.5	20.2	68.4	58.5	--
Gelderland	3.3	4.8	6.3	--	3.4	3.4	--	0.4	--	15.8	--	--
Overyssel	0.8	19.1	3.1	7.7	15.2	0.8	--	4.5	2.5	--	--	--
Utrecht	0.9	5.6	2.3	--	20.8	36.2	--	6.5	--	--	--	--
Zeeland	6.7	--	2.3	--	0.7	0.2	--	--	--	--	--	--
Friesland	1.3	1.0	3.3	--	1.0	2.3	--	3.5	1.5	--	--	--
Groningen	3.9	3.5	7.9	5.1	0.6	1.2	--	1.1	--	--	--	--
Drenthe	0.1	0.6	0.6	--	0.2	--	--	2.8	--	--	--	--
Limburg	0.2	1.5	3.5	1.5	3.3	7.1	23.6	0.3	--	--	--	57.9

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APPENDIX XI

Netherlands Machinery Production

Product & Producer	1935	1936	1937	1938
No. of Hoists, lifts, etc., from				
Machine factories	690	1,077	1,525	2,362
Machine shops	1,633	770	1,417	1,883
Shipyards	91	51	478	1,166
	2,414	1,898	3,420	5,411
No. of Drive machines motors, boilers pump, etc., from				
Machine factories	25,246	31,643	40,985	63,158
Shipyards	2,526	2,752	1,286	2,584
Total	30,772	34,395	4,227	65,742
	33,186	36,293	45,691	71,153
Exp. of Machinery 1939	$18,008,340			
Imp. of Machinery 1939	$42,414,310			

APPENDIX XII

PRINCIPAL ESTABLISHMENTS IN THE NETHERLANDS
PRODUCING OR CAPABLE OF PRODUCING WAR MATERIAL

There are few large industrial establishments in the Netherlands. The many small factories could not greatly assist in the production of war material. In this summary the principal factories are given. The textile works are omitted.

1. Munition Works and Supplies. Amsterdam, at Hembrug - Artillerie Inrichting. This is a government ammunition factory. In October, 1940 this factory, working under German control, employed 3,000 workers. It produces 7.5 cm field guns, rifles, machine-guns, automatic pistols, grenades, shells and cartridges.

Amsterdam. Werkspoor (locomotive works). Prior to occupation it produced the Böhler type 4.7 cm infantry and anti-tank gun. It apparently still makes guns and shells.

Delft. Government construction workshop for repairing and maintaining government motor vehicles. There is also an iron foundry. The peace-time staff is 80, the war time staff in 1914-1918 was 5,000.

Dordrecht. Nederlandsche Patronen Slaghoedjes en Metaalwaren Fabriek. This concern makes and fills cartridges.

The Hague. Hollandsche Industrie en Handels Maatschappij. It is reported that this concern produces 4.7 inch guns. The firm is said to be by no means well equipped for the work and almost all parts for the guns had to be imported.

Rotterdam. Wilton Fijenoord (shipbuilders and marine engineers). This factory is capable of making 8 cm. anti-aircraft guns, also naval guns up to 6" calibre. Very recently (early 1942) it was reported repairing captured British A.A. guns. More than likely this factory is also producing guns. Its warehouses reported damaged recently (early 1942)

Rotterdam. Rotterdamsche Droogdok Mij. (Shipbuilders). Produces anti-aircraft shells. It employs 1,500 workers on shell production.

2. Aircraft Factories of all Types

Amsterdam. Fokker has a branch factory at Veere on Walcheren I.

and sub-contracts are placed with the Werkspoor works at Utrecht. Most of the aircraft built in Holland are the product of this firm.

Dordrecht. Aviolanda works at Papendrecht, near Dordrecht, are believed to assemble aircraft.

The Hague. Pander and Sons build light aircraft and instructional machines. Very small output, but good machines.

Rotterdam. Koolhoven at Waalhaven designs and builds various types, several of which are being manufactured under licence abroad.

Aircraft Repair Depots:

Naval - De Kooy (Helder).
Military - Soesterberg.

3. Iron and Steel Working Plants

See Appendices VIII, IX, and X.

4. Marine Engine Works.

See Appendix XIV for Shipbuilding and Marine Engine Works in the Netherlands.

5. Engineering Works.

Amsterdam - Du Croo and Braun. (Iron construction works.)

John Hillen de Lelie. (All kinds of machinery. Employs 80 men.)

Haarlem - Boynes. (Railway material.)

Helmond - Begemann. (Pumping plants for land drainage.)

Hengelo - (East Holland) Stork Works. (Machinery and steam plants.)

Dikkers. (Accessories for steam, etc., plants.)

Rotterdam - Allen. (Railway material.)

Utrecht - Frans Smulders. (Oil refining plant.)

6. Electrical Engineering Works

Amsterdam - Hollandsche Draad en Kabelfabriek. (Wire and insulated cables.)

Delft - Nederlandsche Kabelfabriek. (Wire and insulated cables.)

Dordrecht - Dynamo and motor factory.

Eindhoven - Philips' Incandescent Lamp Works.

Hilversum - Dutch Telegraphic Apparatus Works.

Hengelo - (East Holland.) - Hoenaf Electrical Engineering Works.

Nijmegen - Transformer works.

Slikkerveer. (Near Rotterdam.) - W. Smit Electrical Engineering Works. (Dynamos, etc.)

7. Chemical Industries which manufacture explosives.

Amsterdam - Sulphuric acid factory.

Nederlandsche Spring-Stoffen Fabrieken. (Manufactures powder, gun-cotton, nitroglycerine, dynamite, gelignite.) Has works at Muiden and Nieuwe Amstel, near Amsterdam.

8. Optical and Precision Instruments.

Hengelo. N.V. Fabriek Van Electrischen Apparaten (F. Hazemeyer and Company). Manufactures instruments of an optical character and also searchlights, electrical signalling, sound locators, artillery fire control gear. Major parts are supplied by Siemens-Schuckert or its associates, Siemens-Halske. This is under full German control. It was established as a subsidiary of Siemens-Schuckert of Berlin. It employs between 2 to 3,000.

Lonneker. Nederlandsche Apparaten Fabriek. It employs 1,000 workers.

Venlo. Nederlandsche Instrumenten Compagnie. Makes lenses, telescopes, range-finders, gun-sights, and signalling lights.

Hilversum. A radio industry, the Ned. Seintoest Fab., a subsidiary of the Philips Co., is engaged in making aircraft transmitting sets and also instruments for blind flying. A report of April, 1942 indicates this factory was damaged.

APPENDIX XIII

Manufacturers of Automotive Units in the Netherlands

Passenger cars.

There are no manufacturers of passenger cars in the Netherlands. There are several car assembling plants however.

Trucks.

There are 3 manufacturers who claim to be manufacturers of trucks, but even these import many of the parts. The 3 manufacturers are: Kromhout, Werkspoor and Schmidts'.

Omnibus.

There are 2 manufacturers of omnibusses in Amsterdam: Kromhout Schmidt's

Motorcycles.

Only the frames are manufactured. The motors are imported primarily from Germany and Great Britain. The Dutch manufacturers are as follows:

1 at Heerenveen--------Rijwielfabriek "Batavus"

1 at Rotterdam -------N.V. Handelmaatschappij, R.S. Stokvis and Sons.

1 at Amersfoort-------Eijsink

1 at Dieren----------Gazelle
Juncker

2 at Apeldoorn--------Simplex Machine

1 at Amsterdam--------Sparta

Production of Automotive Units in the Netherlands 1939.

Passenger cars.

None.

Trucks.

About 100; all diesel; 80/70 horsepower; about 50% Kromhout, 40% Werkspoor, 10% Schmidt's.

Busses.

About 200; almost all Kromhout; 68 horsepower, 4 cylinder Diesels of American patent; 108 mm bore, 152.4 mm. stroke. Capacity: 50% seats for 40 passengers and standing room for 8; 30%--seat 26, stand 16; 20%--seat 37 stand 16; 80% are of twin coach type.

Motorcycles.

No motorcycle motors are made in Netherlands; 7,217 motorcycles were manufactured and equipped with imported motors.

Foreign Assembly plants in Netherlands.

Ford----------Amsterdam

Firna----------Amsterdam

Beers----------The Hague

Engelberts----------The Hague

Produced by assembly.

Passenger cars -- 2,988

Trucks & busses-- 2,266

Imports of Automotive Units.

1939

Passenger cars	13,215
Trucks and Busses	6,558
Motorcycles	13,417

APPENDIX XIV

Shipping Statistics

TABLE I

Shipbuilding and Marine Engine Concerns in the Netherlands

* Yards actually known to have been constructing submarines.

** Capable of assembling and repairing naval craft. In the Netherlands vessels up to 8,000 tons d.w. are hauled up sideways and, consequently, the larger yards thus equiped and having broadside-on launching and repair slips could be used for repairs and even assembly of submarines.

**1. Amsterdamsche Droogdok Mij, N.V. ---- Amsterdam Dry Docks

No.	Length	Breadth at entrance	Depth on blocks	to lift
1	401 ft.	50 ft.	15 ft.	3,000 tons
2	400 "	56 "	17 "	4,000 "
3	428 "	65 "	20 "	7,500 "
5	626 "	91 "	28 "	25,000 "

2. Amsterdamsche Scheepswerf ---- Amsterdam

Shipbuilders, Marine Engines and dry docks and repairs.
No. of Berths: 5.
Capacity: Vessels up to 200 ft. long.
Max. Annual output: Shipyard: 300-400 tons gross.
Engine works: only repairing and installation.

Branch at Alphen-on-Rhine, Netherlands.
No. of Berths: 3.
Capacity: Vessels up to 200 ft. long,

3. Appingedammer Bronsmotorenfabriek N.V. - Appingedam, Netherlands.
Builders of marine engines.

4. Arnhemsche Stoomsleephelling Mij. N.V., Arnhem, Netherlands
No. of Berths: 6.
Slipway: For vessels up to 250 ft. and 1,500 tons d.w.
Capacity: Vessels up to 250 ft. and 1,500 tons d.w.
Max. Annual Output: Shipyard, 3,500 tons.
Engine Works 6,000 i.h.p.

5. Bodewes Gebroeders, G. & H. ---- at Martenshoek, Netherlands.
No. of Berths: 6,

Capacity: Vessels up to 200 ft.
Max. Annual Output: 10,000 tons,

6. Bodewes N.V. Scheepswerven. - at Millingen, near Nijmegen, Netherlands.
No. of Berths: 3,
Capacity: Vessels up to 300 feet long.
Max. Annual Output: Shipyards 14,000 tons.

**7. Boele's Scheepswerven en Machinefab. - at Bolnes, Netherlands,
No. of Berths: 4.
Capacity: Vessels up to 450 feet,
Max. Annual Output: Shipyards: 25,000 tons,
Engine Works:8,000 i.h.p.

8. De Groot and Van Vliet N.V. Scheeps. - Slikkerveer, near Rotterdam, Netherlands, and Papendrecht, near Dordrecht.
Slipways: Slikkerveer: Length 355 feet.
Papendrecht: " 310 "

No. of Berths: Slikkerveer, 3.
Papendrecht, 2.

Capacity: Vessels up to 400 feet.
Maximum Annual Output 16,000-20,000 tons.

9. De Haan and Oerlemans-at Heusden, Netherlands.
No. of Berths: 4,
Capacity: Vessels up to 300 feet long.
Max. Annual Output: Shipyards, 14,000 tons gross.

10. De Klop N.V. Scheeps & Mach. - at Sliedrecht, Netherlands.
No. of Berths: 6,
Capacity: Vessels up to 350 feet.
Max. Annual Output: Shipyards: 15,000 tons,
Engine Works:5,000 i.h.p.

Slipway: 1.

11. De Merwede, N.V. Scheepsbouwwerf. -at Hardinxveld, Netherlands.
No. of Berths: 4.
Capacity: Vessels up to 450 feet long.
Max. Annual Output: Shipyard, 12,000 gross tons.

12. De Nieuwe Maas N.V. Scheepsbouwwerf. -at Vlaardingen, Netherlands.
No. of Berths: 3.
Capacity: Vessels up to 160 feet.
Slipways: 1.
Capacity: Vessels up to 200 feet long.

**13. De Noord, Werf (J.C. Smit), at Alblasserdam, Netherlands.
No. of Berths: 3,
Capacity: Vessels up to 450 feet long.
Max. Annual Output: 12,000 tons.

*14. De Schelde, Koninklijke Mij. -at Flushing, Netherlands.
No. of Berths: 5,
Capacity: Vessels up to 750 feet,

Drydock: Length, 492 ft. Draught of ships 20 ft.
Crane for fitting basin: One 150-ton crane and three 12-ton cranes.
Max. Annual Output: Shipyards, 40,000 tons,
Engine Works, 200,000 i.h.p.

15. Haarlemsche Scheepsbouw Mij., N.V. - at Haarlem, Netherlands.
No. of Berths: 4.
Capacity: Vessels up to 290 feet long.
Max. Annual Output: Shipyards: 8,000 tons gross.

16. Holland Machinefabriek. - at Hardinxveld, Netherlands.
Capacity: Vessels up to 2,000 tons d.w.
Engines up to 1,000 h.p.
Max. Annual Output: 8,000 d.w. and 5,000 i.h.p.

17. Holland Scheepswerf and Machinehandel. - at Hendrik--Ido--Ambacht, Netherlands.
No. of Berths: 3.
Capacity: Vessels up to 360 feet long.
Max. Annual Output: Shipyard, 4,000 tons gross.

18. Koster J., N.V. Scheepswerf. - at Groningen, Netherlands.
No. of Berths: 3.
Capacity: Vessels up to 230 feet long.
Max. Annual Output: Shipyard: 3,000 tons gross.

19. Kromhout Motoren Fab. - at Amsterdam, Netherlands.
Manufactures marine engines.
Max. Annual Output: 50,000 b.h.p.

20. Machinefabriek Bolnes N.V. - at Bolnes, Netherlands.
Makers of Diesel engines from 10 to 600 b.h.p.
Max. Annual Output: Engine Works: 10,000 i.h.p.

** 21. Nederlandsche Dok Mij. - at Amsterdam, Netherlands.

Graving Docks	No. 1	No. 2	No. 3
Length on floor	660 ft. 0 in.	530 ft. 0 in.	450 ft. 6 in.
Depth of water over blocks	29 ft. 0 in.	21 ft. 6 in.	19 ft. 0 in.
Breadth of entrance	88 ft. 6 in.	70 ft. 0 in.	65 ft. 6 in.

No. of Berths: 2.
Capacity: Vessels up to 500 feet long.

** 22. Nederlandsche Scheepsbouw Mij. - Amsterdam, Netherlands.
No. of Berths: 4.
Capacity: Vessels up to 800 feet.
Max. Annual Output: 90,000 tons.

23. New Waterway Shipbuilding Co. at Rotterdam, Netherlands.
3 private floating docks: 10,000 tons, 5,400 tons and 4,300 tons lifting capacity respectively.
No. of Berths: 7,
Capacity: Vessels up to 800 feet.

Max. Annual Output: Shipyards 90,000 tons.
Engine Works, 30,000 i.h.p.

24. Nieuwbouw — en Scheepsreparatie Bedryf-near Rotterdam.
No. of Beths: 2.
Capacity: Vessels up to 350 feet long.
Slipway: For Vessels up to 300 feet.

25. Penn and Bauduin,
Manufacturers of marine engines.
Max. Annual Output: 10,000 i.h.p.

* * 26. Pot, N. V. Scheepsbouwwerf Gebroeders.- at Bolnes.
No. of Berths: 4.
Capacity: Vessels up to 350 feet long.

* 27. Rotterdam Dry Dock Co.- at Rotterdam.
No. of Berths: 7.
Capacity: Vessels up to 800 feet long.
Four Floating Docks: 300 feet, 440 feet, 575 feet and 608 feet long.
Max. Annual Output: Shipyards: 110,000 tons.
Engine works: 120,000 i.h.p.

28. Sander Gebr. N.V. Scheepswerf-Delfzyl-at Delfzyl, Netherlands.
Capacity: Vessels up to 170 feet long.

29. Smit and Zoon, J.-at Foxhol, near Groningen, Netherlands.
No. of Berths: 3.
Capacity: Vessels up to 300 feet long.
Max. Annual Output: 1,500 tons gross.

* * 30. Smit en Zoon's Scheeps en Werf. N.V.-at Kinderdijk, near Rotterdam, Netherlands.
Patent slipways: 2.
No. of Berths: 4.
Capacity: Vessels up to 340 feet long.

31. Smit and Zoon's Scheepswerven N.V. at Westerbroek, near Groningen, Netherlands.
Capacity: 8 motor coasters about 1000-350 tons d.w.

32. Smit Cz, Werf Jan.-at Alblasserdam, Netherlands.
No. of Berths: 4.
Capacity: Vessels up to 340 feet.
Max. Annual Output: 10,000 tons.

* * 33. Smit J., Machinef. en Scheepsw,-at Rotterdam.
Electric slipways : One 370 feet long 98 feet wide.
One, 420 feet long 120 feet wide.

No. of Berths: 4.

Capacity: Vessels up to 730 feet long.
Engines up to 15,000 i.h.p.
Max. Annual Output: Shipyards, 50,000 tons gross.
Engine Works, 50,000 i.h.p.

34. Smits, Machinefabrieken.-at Kinderkyk, Netherlands.
Manufacturers of Marine Engines.
Max. Annual Output: 8,000 i.h.p.

* * 35. Smulders, Werf-at Schiedam, Netherlands.
No. of Berths: 7.
Capacity: Vessels up to 590 feet.
Max. Annual Output: Shipyards: 15,000 tons.
Engine Works: 10,000 i.h.p.

36. Stork, Machinefabriek Gebr., and Co., at Hengelo, Netherlands.
Manufacturers of Marine Engines.

* * 37. Van der Giessen en Zonen's Scheepswerven,-near Rotterdam,at Krimpen a/d Yssel.
No. of Berths: 6.
Capacity: Vessels up to 500 feet.
Max. Annual Output 30,000 gross tons.

38. Vander Werf, N.V. Scheepswerf Gebr.- at Deest, near Nijmegen, Netherlands.
Slipway: 1, length 350 feet, breadth 100 feet.
No. of Berths: 3.
Capacity: Vessels up to 300 feet long.
Max. Annual Output: 2,500 gross tons.

39. Van Diepen N.V., Scheepswerven Gebr -at Waterbuizen, near Groningen, Netherlands.
A shipbuilding and ship-repairing company.

* * 40. Van Duijvendijks Scheepswerf N.V.-at Lekkerkerk, Netherlands.
No. of Berths: 2 for steamers, 12 for smaller craft.
Capacity: Vessels up to 300 feet long.
Max. Annual Output: 12,000 tons.

41. Verschure and Co's Scheepswerfen Machinefabriek -at Amsterdam, Netherlands.
Floating dock: Length— 250 feet, breadth —70 feet.
No. of Berths: 2.
Capacity: Vessels up to 350 feet long.

* * 42. Vuijk en Zonen, at Kralingscheveer, near Rotterdam, Netherlands.
No. of Berths 5.
Capacity: Vessels up to 450 feet.
Electric Slipway: Length 329 feet.
Max. Annual Output: 20,000 tons.

* * 43. Waalhaven Scheepswerf en Machinefabriek, at Rotterdam, Netherlands.
Electric Slipway: Length 426 feet.
Capacity: Vessels up to 7,000 tons d.w.

44. Werf Conrad - Haarlem, Netherlands.
No. of Berths: 6.
Capacity: Vessels up to 500 feet.
Max. Annual Output: 10,000 tons.

45. Werkspoor Engine Works-at Amsterdam.
Marine-steam and diesel engines.
Max. Annual Output: 50,000 i.h.p.

* 46. Wilton --Feyenoord.-at Schiedam, Netherlands.
Floating Docks.

	Length	breadth at entrance	Lifting cap.
No.1.	425 ft;	9 ft;	8,000 tons
No.2.	365 ft;	68 ft;	4,200 tons
No.3.	510 ft;	92 ft;	14,000 tons
No.4.	695 ft;	142 ft;	46,000 tons
No.5.	511 ft;	107 ft; 6 in.	20,000 tons

Graving Dock: Length about 656 feet; width about 279 feet.
No. of Berths: 8.
Patent Slipway: Length 340 feet, for vessels up to 2,500 tons.

* * 47. Naval Dockyard at Den Helder. For a description see see section VI, paragraph 43 of this survey.

APPENDIX XIV TABLE II

CONFIDENTIAL

DRY DOCKS, FLOATING DOCKS, PONTOONS, PATENT SLIPWAYS, ETC.

PORT.	NAMES OF DOCKS, PONTOONS, PATENT SLIPS, ETC.	DRY & FLOATING DOCKS.				PONTOONS, PATENT SLIPS, GRIDIRONS, ETC.				Lifting Power	Difference between H.W. at ordinary Springs and at ordinary Neaps	PROPRIETORS.	OTHER PARTICULARS
		Extreme Length — Length on Bottom	Breadth at Entrance	Height of Sill above Bottom of Dock	Depth on Sill at High Water ordinary Spring Tides	Extreme Length	Length of Cradle	Draft on Keel Blocks at High Water, ordinary Spring Tides					
								Forward	Aft				
		ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	tons	ft. in.		
Amsterdam	Konings Floating Dock No. 1 (Wood)	401' 0 402' 0	57' 2	2' 6	15' 0	...	...	...	...	3000	...	Amsterdam Dry Dock Co.	Built 1880. Divided into 4 compartments.
ditto	Koninginne ditto No. 2 (Steel)	400' 0 400' 0	71' 0	Level	17' 2	...	...	...	...	4000	...	ditto ditto	Built 1879. Divided into 2 compartments
ditto	Wilhelmina ditto No. 3 (Steel)	428' 0 428' 0	78' 4 top 71' 10 bottom	...	20' 0 on blocks	...	...	...	...	7500	...	ditto ditto	of 4 pontoons Built 1899
ditto	Hendrik ditto No. 5 (Steel)	626' 3 626' 3	110' 9	...	26' 0 on blocks	...	...	...	...	25000	...	ditto ditto	Built 1924
ditto	Steel Floating D Dock No.2	269' 0 229' 8	64' 0	...	14' 9 on blocks	...	...	...	...	1700	...	Verschure & Co's Scheepswerf & Machinefabriek, N.V.	Built 1911. Electric Light
ditto	Wood Floating Dock....	164' 10 164' 10	62' 8	Level	13' 2	...	...	...	...	1400	...	Hera, N.V. Machine-fabriek en Techn. Handel.	Built 1843
ditto	ditto ditto	164' 10 164' 10	62' 8	Level	12' 4	...	...	...	...	1000	...	ditto ditto	Built 1853
ditto	Steel Floating Dock	118' 0	32' 2	...	12' 0	...	...	...	...	325	...	N.V. Scheepswerf Machinefabriek Wed. J. L. Ceuvel.	Built 1906.
ditto	Graving Dock No. 1....	668' 0 640' 0	88' 6	2'5	29' 1 on blocks	...	...	...	...	...	...	Nederlandsche Dok Maatschappij	
ditto	ditto No. 2....	536' 0 515' 0	72' 2	2'5	21' 6 on blocks	...	...	...	...	...	...	ditto ditto	Built 1923.
ditto	ditto No. 3 ...	456' 0 436' 0	65' 6	2'5	19'25 on blocks	...	...	...	...	...	...	ditto ditto	Built 1923.
Delfzyl	Electric Slipway	...	...	...	...	246' 0	...	7' 0	7' 0	170	...	Gebr.Niestern & Co.	Depth 10 feet. Out of commission (Dec. 1938).
ditto	ditto	...	...	...	...	280' 0	...	...	7' 0	200	...	ditto ditto	Depth 5 ft. 9 ins.
ditto	Slipway	...	...	...	...	127' 0	78' 9	3' 4	...	200	...	Roelfs Gebr.	Built 1905

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DRY & FLOATING DOCKS. PONTOONS, PATENT SLIPS GRIDIRONS, ETC.

PORT	NAMES OF DOCKS, PONTOONS, PATENT SLIPS, ETC.	Extreme Length — Length on Bottom	Breadth at Entrance	Height of Sill above Bottom of Dock	Depth on Sill at High Water ordinary Spring Tides	Extreme Length	Length of Cradle	Draft on Keel Blocks at High Water, ordinary Spring Tides		Lifting Power	Differences between H.W. at ordinary Springs and at Neaps	PROPRIETORS	OTHER PARTICULARS
								Forward	Aft				
		ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	tons	ft. in.		
Delfzyl	Slipway	...	...	...	...	99° 0	...	...	...	...	...	Roelfs Gebr.	
ditto	ditto	...	...	...	...	...	...	...	...	...	...	ditto	For vessels up to 600 or 700 tons register.
Dordrecht	Side Slip	...	...	...	...	393° 7	393° 7	...	...	2000	...	N.V. Scheepswerf en Machinefabriek "de Biesbosch."	
ditto	ditto Shipyard "De Rijn"	...	...	...	...	295° 6	...	...	...	750	...	P. Hoebee	Cradles pulled up by electric machinery.
ditto	ditto	...	...	...	...	160° 0	160° 0	...	...	500	...	N.V. Machinefabriek v/h H.J. Koopman	
Flushing	Dry Dock	262°11 262°11	52° 6	1° 0	12° 0	...	...	...	...	...	...	N.V. Konink Maats, "de Schelde"	
ditto	Graving Dock	496° 0 488° 0	67° 3	1° 8	20 5	...	...	...	...	...	...	ditto ditto	New dock; expected to be in commission about May, 1939.
Groningen	Patent Slipway ...	...	...	...	...	164°0	53° 0	6° 6	6° 6	150	...	Scheepswerven Gebr. van Diepen, N.V.	For ships up to 400 tons.
ditto	Slipway	...	...	...	...	125°0	...	6° 0	6° 0	...	...	Firma Botje Ensing & Co.	
ditto	Patent Slipway ...	...	...	...	...	131°3	...	6° 7	6° 7	...	...	J. Vos & Zoon	For ships up to 300 tons.
Harlingen	Patent Slipway ...	...	...	...	...	225°0	225° 0	11° 0	11° 0	1000	...	N.V. Scheepswerf en Machinefabriek Wed. J. Wagenaar & Zoon's Slipwegen	Worked by electric winches, Constructed of 14 carriages on rails. Entrance through Zuidersea (sluice), extreme breadth 32 ft. 4 ins.
Martenshoek	Patent Slipway ...	...	...	...	...	197°0	180° 0	6° 0	6° 0	300	...	Th. J. Fikkers	
Nieuwediep	Graving Dock	390° 3 376° 6	51°2 00°4	...	19° 8 on blocks	...	...	...	...	...	...	Government	
ditto	ditto	288° 6	49°3	...	16° 5	...	...	...	...	...	...	ditto	
ditto	Floating Dock	164° 1	24°0	...	11°11 on blocks	...	...	...	...	...	...	ditto	

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DRY & FLOATING DOCKS — PONTOONS, PATENT SLIPS GRIDIRONS, ETC.

PORT	NAMES OF DOCKS, PONTOONS, PATENT SLIPS, ETC.	Extreme Length -- Length on Bottom	Breadth at Entrance	Height of Sill above Bottom of Dock	Depth on Sill at High Water ordinary Spring Tides	Extreme Length	Length of Cradle	Draft on Keel Blocks at High Water, ordinary Spring Tides: Forward	Draft on Keel Blocks at High Water, ordinary Spring Tides: Aft	Lifting Power	Differences between H.W. at ordinary Springs and at Neaps	PROPRIETORS	OTHER PARTICULARS
		ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	tons	ft. in.		
Rotterdam	Floating Dock No.1(iron)	157' 6 157' 6	67' 0	Level	20' 0	...	...	...	...	2000	4'0"	Municipality (Havenbedrijfder Germeente Rotterdam)	Built 1883. } May be used as One dock.
ditto	ditto No.2(iron)	295' 0 295' 0	67' 0	Level	20' 0	...	...	...	...	4000	4'0	ditto	Built 1883. }
ditto	ditto No.3(iron)	360'11 360'11	67' 0	Level.	21' 0	...	...	...	...	6000	4'0	ditto	Built 1892.
ditto	Pontoon Dock No. 4(steel)	557' 4	95' 0 86' 8	Level	25' 0	...	...	...	...	15000	...	ditto	Built 1904.
ditto	Prins Hendrik Floating Dock No. 1 (steel)	300' 0	51' 0	No Sill	20' 0 on blocks	...	...	...	...	3000	...	Rotterdamache Droogdok Maatschappij	Built 1903. 5 ton electric crane.
ditto	ditto No. 2 (steel)	436' 0	72' 0 (available)	No Sill	22' 0	...	...	...	...	8000	...	ditto	Built 1903. 5 ton electric crane.
ditto	ditto No. 3 (steel)	575' 0	88' 0	No Sill	26' 0 on blocks	...	...	...	...	14000	...	ditto	Built 1923. 3 & 7 ton electric crane.
ditto	ditto No. 4 (steel)	608' 0	88' 0	No Sill	27' 0 on blocks	...	...	...	...	20000	...	ditto	Built 1923. 3 & 8 ton electric crane.
ditto	Slipway (transverse)	...	...	...	...	377' 0	361' 0	11' 0	11' 0	about 2000	4'0	Machinefabriek en Scheepswerf van P. Smit, Jr., N.V.	Cradles, 21 in number, pulled up by electric machinery.
ditto	ditto	...	...	...	...	421' 0	...	11' 0	11' 0	about 3000	...	ditto	Cradles, 24 in number, pulled up by electric machinery.
ditto	Electric Side Slipway	...	...	...	...	425' 0	...	12' 9	12' 9	4000	4'0	N.V. Scheepswerf en Machinefabriek "Waalhaven" v/h Lith & Madern	Cradles, 22 in number, pulled up by electric machinery.
ditto	Slipway (transverse)	...	...	...	...	340' 0	310' 0	11' 0	11' 0	2000	4'0	Wilton's Engineering & Slipway Co.	Cradles pulled up by electric machinery.
ditto(Schiedam)	Floating Dock No. 1 (steel)	424' 2 424' 2	79' 0 70' 0	...	...	...	...	...	...	8000	...	ditto ditto	Maximum draught of vessel 19 ft. Built 1907. } The two widths given are internal widths at top and bottom respectively.
ditto	ditto No. 2 (steel)	365' 0 365' 0	68' 0 60' 0	...	...	...	...	...	...	4500	...	ditto ditto	Maximum draught of vessel 18 ft. Built 1910. }

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DRY & FLOATING DOCKS PONTOONS, PATENT SLIPS GRIDIRONS, ETC.

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PORT	NAMES OF DOCKS, PONTOONS, PATENT SLIPS, ETC.	Extreme Length — Length on Bottom ft. in.	Breadth at Entrances ft. in.	Height of Sill above Bottom of Dock ft. in	Depth on Sill at high water ordinary Spring Tides ft. in.	Extreme Length ft. in.	Length of Cradle ft. in.	Draft on Keel Blocks at High Water, ordinary Spring Tides: Forward ft. in.	Draft on Keel Blocks at High Water, ordinary Spring Tides: Aft ft. in.	Lifting Power tons	Differences Between H.W. at ordinary Springs and at Neaps Ft. in.	PROPRIETORS	OTHER PARTICULARS
Rotterdam	Floating Dock No. 3 (steel) (Wilhelmina Dock)	510' 0 510' 0	92' 0 81' 0	...	...	...	...	...	...	14000	...	Wilton's Engineering & Slipway Co.	Maximum draught of vessel 21 ft. Built 1915.) The two widths Given are internal Widths at top and bottom respectively.
ditto	Floating Dock No. 4 (steel)	695' 0 695.0	142' 0 132.0	...	...	...	...	...	...	46000	...	ditto ditto	Maximum draught of vessel 35 ft. Built 1921.)
ditto	ditto No. 5	511' 3 511' 3	106' 0 106.0	...	...	...	...	...	...	20000	...	ditto ditto	Built 1912.
ditto	ditto No. 5 (steel)	360' 0	70' 6	...	21' 0 on blocks	...	...	...	...	5500	...	New Waterway Shipbuilding Co.	Built 1919. Two 5 ton electric cranes.
ditto (Schiedam)	ditto No. 6	500' 0	75' 6	...	22' 0 on blocks	...	...	...	...	10500	...	ditto	Built 1914-15. Twelve 2-ton electric derricks.
ditto	ditto No. 7 (steel)	360.0	70' 6	...	21.0 on blocks	...	...	...	...	4500	...	ditto	Built 1919. Two 5-ton electric cranes.
Spaarndam	Spaarndok No. 1	226' 5	35' 5	3'4	10' 0	...	...	...	...	350	...	Spaarndammer Scheepswerf Stapel N.V.	Built 1918.
ditto	ditto No. 2	180' 0 164' 0	34' 5	3'4	10' 0	...	...	...	...	450	...	ditto	Built 1937.
Utrecht	Nil	...	...	...	...	...	...	...	...	...	...	ditto	Built 1937
Vierverlaten	Patent Slipway	...	...	...	...	213' 0	...	6'6	6'6	...	...	Gebr. Barkmeijer	For ships up to 300 tons
Ijmuiden	Steel Floating Dock No. 1	164' 0	34' 4	...	17' 0	...	...	...	...	650	...	Government	Built 1909.
ditto	ditto No. 2	197' 0	35' 0	...	14' 0	...	...	...	...	600	...	ditto	Built 1904.
Zaandam	Nil	...	...	...	...	...	...	...	...	...	...		

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APPENDIX XV

ELECTRIC POWER STATISTICS

TABLE I - ELECTRIC POWER PLANT FACTS

Item	1937 Latest Available Which Are Complete.
Number of power producers	35
Installed generator capacity (kw)	1,320,831
Maximum load (kw)	705,105
Heating surface of boilers (sq/m.)	177,928
Capacity of converters and rectifiers (kw)	73,666
Consumption of coal (tons)	1,153,089
No. of cities and towns receiving electricity	1,049**
Capacity of transformers (kw)	3,002,277
Length of high tension lines	
Underground (miles)	11,287.1
Overhead (miles)	862.3
Number of consumers	1,818,347
Net worth of property	ƒ371,848,000
Number of employees	
Administrative, technical, etc.	4,891
Machinists, stokers, laborers, etc.	5,381
Energy generated (thousands of kw.-hrs.)	2,204,096
Energy for distribution (thousands of kw.-hrs.)	2,089,730
Energy consumed (thousands of kw.-hrs.)	1,977,502
Per capita consumption (kw.-hr.)	299
USE, (in thousands of kw.-hrs.)	
Lighting and household (at night rate)	106,168
" at fixed rate for heating and double rate	494,944
" ordinary rate	98,724
Public lighting	57,103
Power	
Traction	170,125
Water pumping	34,164
Other power	1,016,274
Total	1,977,502

TABLE II - CENTRAL LIGHT AND POWER STATIONS OF THE NETHERLANDS

City	Name of Company	Capacity kw.	Consumers Type	Ph	Cycle	Voltage Voltage	Class of plant
Amsterdam	Gemeente-Electriciteitswerken	211,000	A.C.	3	50	220/380	Steam
Arnhem	Provinciale Gelderse Electriciteits Mij., N.V.	144,300	A.C.	3	50	220/380	Steam
	Gemeente Electriciteitsbedrijf**	---	A.C.	3	50	220/380	Bulk
Beilen	Cooperative Beilen	227	D.C.	-	---	220	-----
Boxtel	Mij. voor Electrische Centraalstations Haarlem	640	D.C.	-	--	2 x 225	Steam & Diesel
Delft	Gemeente Electriciteitsbedrijf	22,600	A.C.	3	50	220	Steam
Den Burg, Island of Texel	Texelse Electriciteits Mij.	1,200	A.C.	3	50	220/380	Steam & Diesel
Dordrecht	Gemeente Electriciteitsbedrijf	43,050	A.C.	3	50	125/216	Steam
			A.C.	3	50	220/380	-----
Eindhoven	(Supplied by plant at 's-Hertogenbosch)*	---	A.C.	3	50	220/380	Purchased
Emmen	Gemeentelijk Electriciteitsbedrijf	186	D.C.	-	--	220/380	-----
	Cooperative Roswinkel	40	D.C.	-	--	220	-----
Gouda	Gemeente Lichtfabrieken	8,850	A.C.	3	50	127/220	Steam
			A.C.	3	50	220/380	-----

**Ceased to be a generating plant in 1938; obtain current from Provincial Plant.
*No generating plant; distribution only.

City		Capacity kw.	Consumers Type	Ph	Cycle	Voltage Voltage	Class of plant
Groningen	Provinciaal Electrische Bedrijf van Groningen	73,500	A.C.	3	50	220/380	Steam
	Gemeentelijk Electriciteitsbedrijf	7,500	A.C.	3	50	220/380	Steam
Haarlem	Gemeente Electriciteitsbedrijf	34,000	A.C.	3	50	220/380	Steam
The Hague	Gemeentelijk Electriciteitsbedrijf	88,000	A.C.	3	50	127/220	Steam
Hengelo	Twents Centraal Station voor Electrische Stroomlevering, N.V.	57,400	A.C.	3	50	220/380	Steam
's-Hertogenbosch	Provinciale Noordbrabantsche Electriciteits Mij.	106,750	A.C.	3	50	220/380	Steam
Hollum (Ameland)	N.V. Electriciteitsbedrijf Hollum of Ameland	24	no	data		220/380	———
Leeuwarden	Provinciaal Electriciteitsbedrijf in Friesland	23,494	A.C.	3	50	220/380	Steam
	Gemeentelijk Electric. Bedrijf	——	A.C.	3	50	127/220	Purchased
Leiden	Stedelijke Electriciteitsfabrieken	35,200	A.C.	3	50	127/220	Steam
		——	A.C.	3	50	220/380	———
St. Maartensdijk	Cooperatieve St. Maartensdijk	82	D.C.	-	—	220	———
Maastricht	Provinciale Limburgse Electriciteits Maatschappij*	——	A.C.	3	50	220/380	Purchased
	Gemeentelijk Electriciteits Bedrijf	——	A.C.	3	50	127/220	Purchased
Nes (Ameland)	Electriciteitsbedrijf Nes op Ameland, N.V.	80	D.C.	-	—	220/380	———
Nijmegen	Gemeente Electriciteitsbedrijf*	——	A.C.	3	50	125/216	Purchased
Rotterdam	Gemeente Electriciteitsbedrijf	161,240	(D.C.	-	—	220/440	Steam
			(A.C.	-	—	220/380	Steam
Schiermonnikoog	Electriciteitsbedrijf Schiermonnikoog, N.V.	90	D.C.	-	—	110	———
Terschelling	Terschellinger Electriciteits-Maatschappij	304	A.C.	3	50	220/380	———
Tilburg	Gemeente Electriciteitsbedrijf	26,000	A.C.	3	50	220	Steam
Urk	Gemeente Electriciteitsbedrijf	126	D.C.	-	—	220	———
Utrecht	Gemeente Electriciteitsbedrijf*	——	A.C.	3	50	120/208	Purchased
		——	D.C.	-	—	220/440	Purchased
	Provinciaal en Gemeentelijk Utrechts Stroomleverings-bedrijf, N.V.	72,750	A.C.	3	50	——	Steam
Veendam	Electriciteits-Maatschappij "Veenkolonien, N. V."	670	A.C.	3	50	150/260	Steam
Velzen	Provinciaal Electriciteitsbedrijf van Noord Holland	118,200	A.C.	3	50	220/380	Steam
Venlo	Gemeente Electriciteitsbedrijf	5,510	A.C.	3	50	120/208	Steam
Vlieland	Gemeente Electriciteitsbedrijf	34	D.C.	-	—	220	———
Vlissingen	Provinciale Zeeuwse Electriciteits Maatschappij, N. V.	15,940	A.C.	3	50	120/208	Steam
		——	A.C.	3	50	220/380	Steam
Zwolle	Electriciteitsfabriek Ijsselcentrale, N.V.	27,200	A.C.	3	50	125/216	Steam
		——	A.C.	3	50	220/380	Steam

**Ceased to be a generating plant in 1938; obtain current from Provincial Plant.
*No generating plant; distribution only.

In addition to the above central stations which have distribution systems, there are 3 Government mines at Heerlen, which generate electricity for sale to municipalities. There is at Roermond a private hydro-electric plant of 800 hp., which generates power for its own use.

APPENDIX XVI

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ICE MAKING AND COLD STORAGE PLANTS IN THE NETHERLANDS

ICE MAKING PLANTS IN NETHERLANDS

(1923)

Town	Name of Company	Per 24 hour capacity	Method
Amsterdam	Abattoir, Amsterdam	50 tons	Raw water, with air agitation, 420 cans; compression system.
Amsterdam	Bierbrouwerij "De Amstel"	50 tons	Raw water, with air agitation, 1000 cans; compression system used.
Amsterdam	Bierbrouwerij "Gekroonde Valk"	50 tons	Distilled water, 3,000 cans; compression system.
Amsterdam	Heinekens Bierbrouwerij	30 tons	Raw water, with air agitation, 630 cans; Soy system used.
Amsterdam	Koninklijke Nederlandsche Beyerische Beerbrouwerij	10 tons	Raw water, air agitation, 210 cans; Soy system used.
Amsterdam	A.vander Bilt	50 tons	Raw water, with air agitation, 1000 cans; compression system used.
Rotterdam	Heinekens Bierbrouwerij Mij.	80 tons	Can systems with air agitation, 3,146 cans; raw water, compression system used.
Rotterdam	N.V. Brouwerij d'Oranjeboom	120 tons	Can system with air agitation, 2,976 cans; raw water, compression system used.
Rotterdam	Co-operative Ysfabriek	65 tons	Can system with air agitation, 2,000 cans; raw water, compression system used.
The Hague	Zuidhollandsche Bierbrouwerij en Ysfabriek	56 tons	Can system with air agitation, 2,600 cans; raw water, compression system used.
Scheveningen	Visschanden, Rederij en Ysfabriek	25 tons	Can system with air agitation, 1,000 cans; raw water, compression system used.

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ICE MAKING PLANTS IN NETHERLANDS

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Town	Name of Company	Per 24 hour capacity	Method
Scheveningen	Jacobus den Dulk en Zonen	10 tons	Can system with air agitation 408 cans; raw water, compression system used.
The Hague	Openbaar Slackthuis	30 tons	Can system without air agitation 1,150 cans; raw water, compression system used.

COLD STORAGE PLANTS
(1923)

Town	Name of Concern	Capacity	Temp.	Principal Products Handled	Facilities
Amsterdam	Abbatoir	26,217 cubic feet	10°-40°F	Meat and small quantity of vegetables and fruits.	Plant is on a canal with outlet to sea, accomodates ocean going ships of about 2,000 tons. Also, a railroad 1,000 ft. away reached by well paved streets.
Amsterdam	Amerika	283,185 cubic feet	36°-12°F	Frozen beef & fat imported	Deep water frontage, electric portable cranes, railroad siding.
Amsterdam	Blaauwhoedenveen-Vriesseveem	354,000 cubic feet	36°-12°F	44,960 cubic feet for storage of meat 309,040 cubic feet for storage of dairy products.	Canal for ships alongside, electric cranes, railroad on other side of canal, with connection by barge or motor truck.
Amsterdam	Municipal			In connection with the market at Raampoort.	
*Amsterdam has a cold storage space of 663,402 cubic feet which is ample for several years to come.					
Rotterdam	Rotterdam Cold Storage Co.	375,000 cubic feet	5°-32°F	Frozen meat, dairy products and fruit.	Direct connection with a wharf on Maas R., 2 electric cranes with a capacity of 300 tons per 8 hr. working day, 2 railroad tracks on quay and one on street side of plant, distance to water front is 25 yards.

COLD STORAGE PLANTS

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Town	Name of Company	Capacity	Temp.	Principal Products Handled	Facilities
Rotterdam	Blaauwhoedenveem - Vriesseveem	212,000	10°-32°	Meat and dairy products	Near Konings Haven. Goods loaded along Haven to quay by lighters and taken to plant by motor trucks. Plant is 98 feet from quay and 1,640 feet from railroad.

APPENDIX XVII

The Water Supply System of Some Towns of the Netherlands

1. AMSTERDAM, (1929); municipal; 249 wells about 131 feet deep, and surface water from Merwede Canal; slow sand filtration and aeration to remove manganese. One reservoir with capacity of 2.6 million gallons.
2. ARNHEM, (1929); private (Arnhemsche Waterleiding Mij); 94 wells 33 to 230 feet deep; no treatment; one reservoir and one water tower with total capacity of 449,000 gallons. Daily consumption 20 gallons per capita.
3. APELDOORN, (1929); municipal; 12 wells 82 to 157 feet deep; no treatment; two tanks with total capacity of 211,000 gallons. Daily consumption is 9.5 gallons per capita.
4. DORDRECHT, (1929); municipal; surface water; slow sand filtration; one water tower with capacity of 132,000 gallons. Daily consumption is 30 gallons per consumer.
5. EINDHOVEN, (1929); municipal; 16 wells 115 feet deep; slow sand filtration; one water tower and one reservoir with total capacity of 370,000 gallons. Daily consumption is 13 gallons per capita.
6. ENSCHEDE, (1929); municipal; 60 wells 39 to 49 feet deep; slow sand filtration; one water tower with capacity of 159,000 gallons. Daily consumption 15 gallons per capita.
7. GRONINGEN, (1929); municipal; 22 wells about 197 feet deep, and surface water; slow sand and rapid sand filtration; three water towers with a total capacity of 442,000 gallons.

8. HAARLEM, (1929); municipal; 340 wells about 49 feet deep; slow sand filtration; one water tower with a capacity of 317,000 gallons.

9. HILVERSUM, (1929); private (Utrecht Waterleiding Mij); 36 wells 43 to 79 feet deep; no treatment; one water tower with capacity of 159,000 gallons. Daily consumption about 100 gallons per capita.

10. IEIDEN, (1929); private (N.V. Leidsche Duinwater Mij); ground water; slow sand filtration; one reservoir and two water towers with total capacity of 1.8 million gallons.

11. MAASTRICHT, (1929); municipal; two wells 26 feet deep and one well 33 feet deep connected with infiltration gallery; no treatment; one tank holding 108,000 gallons. Daily consumption 22 gallons per capita.

12. NIJMEGEN, (1929); municipal; 45 wells 197 to 230 feet deep in Kronenburgpark; no treatment; two natural reservoirs with a combined capacity of 793,000 gallons. Daily consumption 23 gallons per capita.

13. ROTTERDAM, (1929); municipal; surface water; slow sand filtrations; one reservoir and two water towers with a combined capacity of 2.6 million gallons. Daily consumption about 30 gallons per capita.

14. THE HAGUE, (1929); description of supply not available.

15. TILBURG, (1929); private (Tilburgsche Waterleiding Mij); 80 wells 82 feet deep; rapid sand filtration; total reservoir capacity is 423,000 gallons. Daily consumption 27 gallons per capita.

APPENDIX XVIII

GAS MANUFACTURING AND DISTRIBUTING STATIONS IN THE NETHERLANDS:1937 (latest available)

Town	Annual Make Mil.C.Ft.	Meters Ord.	Meters Slot	Miles of Mains
Aalten	15	682	399	--
Alkmaar	152	8,703	1,586	64
Almelo	106	4,287	2,369	34
Alphen a/d Rijn	63	4,418	2,017	30
Amersfoort	254	8,286	3,815	102
Amsterdam	3,484	59,625	151,893	556
Apeldoorn	282	5,480	6,945	173
Appingedam	15	1,166	---	9
Arnhem	392	8,612	11,918	98
Assen	106	2,022	1,794	27
Axel	23	927	1,462	--
Baarn	71	2,584	678	28
Barneveld	19	649	394	15
Barradeel!	12	502	108	19
Bedum	17	605	277	13
Bergen op Zoom	95	3,028	1,493	31
Bevewijk	104*	1,760	3,370	35
Bloemendaal	74*	2,403	367	40
Bodegraven!	32	801	536	--
Bolsward	39	964	728	9
Borne	9*	88	775	7
Boskoop	35	943	737	11
Boxtel	14*	699	243	11
Breda	254	9,246	2,742	70
Brielle	18	963	477	--
Brummen!	--	---	---	--
Bussum	176	5,106	2,873	69
Castricum	24	637	421	13
Coevorden	--	---	---	--
Culemborg!	--	635	1,317	--
Delft	198	5,849	6,827	61
Deventer	229	5,256	4,359	49
Dirksland	9	393	357	--
Doesburg	26	645	527	7
Doetinchem	42	1,782	1,135	40
Dokkum	22	1,049	84	--
Dongen	15	1,115	--	7
Dordrecht	296	4,740	10,560	76
Edam	24	712	829	16
Ede	56	2,547	1,175	50
Egmond a/d Hoef	1*	69	78	1
Egmond aan Zee	12	522	457	4
Eindhoven	622*	8,789	11,978	137
Elburg	---	---	---	--
Enkhuizen	74	1,310	2,796	34
Enschede	176	13,312	972	81
Franeker	39	985	927	12
Geldrop	11*	248	247	5
Gilze-Rijen	6*	530	---	10
Goes	95	3,201	2,148	72
Goirle	10	795	121	7
Goor	13	643	262	5
Gorinchem!	56	2,116	705	15
Gouda	116	5,487	2,098	37
Grave	--	---	---	--
's-Gravendeel!	--	---	---	--
's-Gravenhage	2,602	74,903	56,134	456
Groenlo	---	---	---	--

GAS MANUFACTURING AND DISTRIBUTING STATIONS IN THE NETHERLANDS: 1937 (latest available)

Town	Annual Make Mil.C.Ft.	Meters Ord.	Meters Slot	Miles of Mains
Groningen	550	17,935	9,182	--
Haarlem	840	19,451	19,636	234
Haarlemmermeer	5*	62	652	5
Harderwijk	39	1,148	775	--
Harlingen	53	1,350	1,401	15
Haskerland	14	614	235	7
Hattem	8	419	83	--
Heemstede	123	3,388	1,402	46
Heerlen	117*	1,847	3,750	52
Helder	113	5,083	1,779	38
Hellevoetsluis!	---	---	---	4
Helmond	56*	3,374	1,185	22
Hengelo!	---	---	---	--
's-Hertogenbosch	141*	4,643	2,964	--
Het Bildt	13	524	382	10
Heusden!	---	---	---	--
Hillegersberg	68*	2,577	1,638	24
Hillegom	42	967	1,269	20
Hilversum	381	10,052	8,582	141
Hoek v. Holland	8*	257	381	9
Hoensbroek	39*	176	2,325	17
Hoogeveen	30	1,083	470	31
Hoogezand!	15	707	112	8
Hoorn	81	2,305	2,067	39
Huizen	49	1,409	1,511	36
Hulst	14	381	450	8
IJsselmonde	5*	324	412	1
IJsselstein	25	464	1,056	11
Kampen	95	1,907	2,803	--
Katwijk	53	2,439	1,106	15
Kerkrade!	27	710	2,032	26
Klundert	9	293	294	4
Krabbendijke	9	736	752	31
Laren(N.H.)	21*	750	624	19
Leerdam	35	621	1,219	9
Leeuwarden	219	9,049	3,986	61
Leeuwarderadeel	46	2,190	614	11
Leiden	621	12,979	16,459	235
Lemsterland	21	625	629	14
Lisse	35	670	974	18
Lochem	32	1,283	711	12
Lonneker	19*	1,493	936	16
Loon op Zand	21	819	793	17
Loosduinen	191*	7,439	4,600	82
Maarssen	14*	509	372	8
Maassluis,	25	647	825	7
Maastricht	173*	8,685	901	59
Medemblik	17	606	267	6
Meppel	56	1,556	1,273	14
Middelburg	63	2,049	1,514	20
Middelharnis	20	937	995	8
Montfoort	9	222	191	3
Muiden	5*	70	507	8
Nieuwe Niedorp	15	535	212	12
Nieuwer-Amstel	42*	872	1,503	16
Nijkerk	32	448	723	9
Nijmegen	353	9,708	7,425	97
Nrd-Scharwoude	30	1,520	832	12
Noordwijk	46	1,300	1,005	16

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GAS MANUFACTURING AND DISTRIBUTING STATIONS IN THE NETHERLANDS: 1937(latest available)

Town	Annual Make Mil.C.Ft.	Meters Ord.	Meters Slot	Miles of Mains
Numansdorp	21	541	901	21
Oisterwijk!	17	590	452	--
Oldenzaal	25	1,033	1,007	16
Oostburg	10	453	251	10
Oosterhout	35	826	1,008	12
Opsterland	16	---	---	--
Oss	31	732	370	12
Oud-Beijerland	22	627	854	8
Oudenbosch	10	413	313	--
Ouder-Amstel	7*	164	455	7
Oude-Pekela	14	313	415	6
Oude-Tonge!	28	1,009	1,024	32
Oudewater	16	478	368	--
Pernis	35	698	1,483	30
Pijnacker	6*	331	371	6
Princenhage	5*	375	122	6
Purmerend	42	1,239	809	21
Putten	8	526	56	10
Raalte	9	288	189	4
Renkum!	--	---	---	--
Rheden	95	2,407	2,534	46
Rijnsburg	17*	332	570	5
De Rijp!	--	---	---	--
Rijssen	30	519	1,106	14
Roermond	74*	2,330	504	16
Roosendaal en Nispen	46	1,216	945	17
Rotterdam	2,824	35,026	122,186	412
Sappemeer	19	425	855	14
Sassenheim	18*	483	571	8
Schagen	--	---	---	--
Scherpenzeel!	--	---	---	--
Schiedam	247	4,791	8,877	45
Schipluiden	2*	62	207	4
Schoonhoven	17	676	396	6
Schoorl	3*	185	115	9
Schoterland	42	1,632	347	--
Sittard	56*	876	1,574	14
Sliedrecht	33	1,123	1,538	--
Smallingerland	28	938	622	16
Sneek	102	2,472	1,546	23
Soest	30*	1,541	786	26
Stadskanaal	19	1,130	80	14
Steenbergen!	--	---	---	--
Steenwijk	25	850	752	--
Stompwijk-Veur	15	422	729	11
Tholen	9	172	446	5
Tiel	42	935	1,725	--
Tilburg	356	19,203	---	103
Ubbergen	5*	208	30	7
Uithuizen	16	529	465	10
Utingeradeel	13	454	357	5
Utrecht	875	30,323	16,101	250
Vaals	15*	743	622	7
Valkenburg-Houthem	--	269	20	10
Valkenswaard	8*	182	514	14
Veenendaal!	--	---	---	--
Veghel	7	363	9	3
Velzen	197*	2,387	7,993	55

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APPENDIX XVIII

GAS MANUFACTURING AND DISTRIBUTING STATIONS IN THE NETHERLANDS: 1937(latest available)

Town	Annual Make Mil.C.Ft.	Meters Ord.	Meters Slot	Miles of Mains
Venlo	94*	3,530	1,978	36
Venray	5	261	12	8
Vianen!	--	---	---	--
Vlaardingen	131	2,025	4,897	29
Vlissingen!	--	---	---	88
Voorburg	109	4,582	1,359	35
Vooschoten	27*	675	582	9
Vreeswijk	6*	230	255	4
Vught	33*	1,450	440	19
Waalwijk	31	1,034	927	9
Waddinxveen	26	617	707	13
Wageningen	42	1,446	1,091	20
Warmenhuizen	20	741	527	23
Wassenaar	68*	2,301	636	44
Weert	31*	739	455	--
Weesp	24*	861	836	7
Weststellingwerf	18	960	158	8
West-Terschelling!	--	---	---	--
Winschoten	49	1,569	1,214	--
Winterswijk	35	1,218	1,197	24
Woerden	28	990	467	10
Workum	13	318	338	4
Wormerveer	64*	1,872	2,810	25
Yerseke	11	490	436	--
Zaandam	282	5,482	7,349	59
Zalt-Bommel	19	497	455	--
Zandvoort	45*	1,363	1,453	15
Zeist	251	9,502	3,047	151
Zevenbergen	30	374	937	19
Zierikzee	25	846	827	--
Zutphen	106	3,495	1,879	30
Zwolle	201	7,812	1,989	46
Zwijndrecht	16	447	1,199	14

With the exception of those marked! , all the gasworks in this list are municipally owned; *gas bought in bulk.

APPENDIX XIX

Capacity of the Main Lines of Netherlands Railroads

The capacity of the main lines is governed by the following factors:

i. Track lay-outs and signalling are designed for trains running at 8-minute intervals; on short sections out of the larger termini, the interval may be reduced to 3 minutes.

ii. Passing loops and arrival and departure sidings allow maximum train lengths of engine and 50 cars.

iii. The locomotive power, accommodation in sidings, available rolling stock, operating methods, etc. impose the following limitations on the carrying capacity of trains;

Passenger trains: 13 eight-wheeled coaches or the equivalent in four - or six-wheelers, seating 1,400 passengers, net weight behind the engine approximately 400 tons, gross weight 500 tons. With double-heading this may be increased by 50 % for part of the number of trains run.

Freight trains: 50 cars, maximum load 15 tons, net load behind the engine 750 tons, gross weight, maximum 1,350 tons. With double-heading this may be increased by 20 % for part of the number of trains run.

iv. The transport capacity in normal times is highest on the Dutch railway system, when passenger trains are limited to day-time, freight trains to night-time. This method is practicable in the Netherlands where even the longest distances are so short that no night passenger trains are required. The figures given hereafter are based on this working method.

v. The Dutch railways are principally equipped for passenger traffic. Local freight traffic is small, and the only stations where the handling of freight traffic of considerable tonnage is possible are those of the ports of Amsterdam and Rotterdam. Since waterborne transport is cheaper, and railborne transport, quicker, it follows that for passenger and perishable freight traffic, the transshipment point is on the coast, but for freight generally at a point as far inland as can be reached by seagoing vessels. For this reason, Ijmuiden, Hook of Holland, Flushing are well equipped for high capacity passenger transport but not for heavy freight traffic, which must find its terminus at Amsterdam, Rotterdam, and Antwerp respectively.

In times of stress, therefore, men and small equipment can be carried to and from the former points but heavy equipment must use the latter points.

TABLE

Capacity, Measured in Trains per 24 Hours, in Each Direction Simultaneously, Unless Otherwise Stated.

	1939 Time-table frequency pass.	freight	Maximum in normal operating pass	freight	total	Maximum in emergency pass	OR	freight
Normal double-track sections, joining through lines both ends			150	12	162			
Normal single-track sections, joining through lines both ends			40	8	48			
Coastal Sections								
Flushing - Roosendaal	24	5	150	12	162	190	or	36
Hook of Holland - Rotterdam	40	5	160	6	166	190	or	24
Ijmuiden - Amsterdam	60	5	160	12	172	190	or	36
Den Helder - Amsterdam Haarlem	14	5	40	8	48	75	or	24
Harlingen - Groningen	18	5	40	8	48	75	or	24
(Delfzyl - Groningen, North route	12	1	40	8	48	75	or	24
" " South route if worked	10	1	40	8	48	75	or	24
" " South UP) North DOWN)						190	or	24

NOTE: The Delfzyl - Groningen routes crossing loops allow train lengths of 40 cars.only.

Through Lines								
Amsterdam - The Hague - Esschen (single-track bridge Moerdyk)	42	8	60	12	72	80	or	80
Amsterdam - Utrecht - Esschen (single-track bridge Hedel)	40	10	60	12	72	80	or	80
Both lines if worked in one direction only						180	or	180
Amsterdam - Deventer - Rheine Gronau	18	12	60	12	72	80	or	80
Amsterdam - Zutphen - Rheine Gronau	13	4	60	12	72	80	or	80
Same line, if worked UP via Zutphen, DOWN via Deventer						180	or	180
Amsterdam - Eindhoven - Maastricht (single-track bridge Hedel)	16	4	60	12	72	80	or	80
Amsterdam - Nijmegen - Maastricht								
* (single-track sections)	10	4	60	12	72	80	or	80
Amsterdam - The Hague - Utrecht - Emmerich Rotterdam -	58	9	150	20	170	180	or	180
Amsterdam - Amersfoort - Groningen Utrecht	18	7	150	12	162	190	or	36
Rotterdam - Kesteren - Winterswyk single track	10	6	60	6	66	75	or	24
Amsterdam - Apeldoorn - Winters- single track wyk	8	8	60	6	66	75	or	24

NOTE: The double-track sections in all these through lines have a capacity similar to that of sections between junctions, see above.

*Both lines if worked in one direction only	180	or	130

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APPENDIX XX

Railroad Routes in the Netherlands

A. List of Routes Described

Route

1. Flushing - Venlo - German frontier
2. Eindhoven - Roermond - German frontier
3. Boxtel - Gennep - German frontier
4. Hook of Holland - Utrecht - Zevenaar - German frontier
5. Zevenaar - Winterswyk, reversing to German frontier
6. Hook of Holland - Nijmegen - German frontier
7. Ijmuiden - Oldenzaal - German frontier, and Enschede German frontier, via Deventer or Zutphen
8. Zutphen - Winterswyk - German frontier
9. Den Helder - Amsterdam via Zaandam and via Uitgeest
10. Harlingen - Nieuwe Schans - German frontier
11. Belgian frontier - Roosendaal - The Hague - Amsterdam
12. Belgian frontier - Roosendaal) - Utrecht - Amsterdam
    Belgian frontier - Baarle Nassau)
13. Belgian frontier - Maastricht - Zwolle
14. Utrecht - Zwolle - Groningen - Delfzyl
15. Groningen - Delfzyl, Southern route
16. Meppel - Leeuwarden
17. Moerdyk - 's-Hertogenbosch - Nijmegen
18. The Hague - Gouda
19. Leiden - Woerden and Gouda
20. Rotterdam - The Hague and Scheveningen
21. Nieuwersluis-Junction - Aalsmeer and Amsterdam branch
22. Enkhuizen and Medemblik - Alkmaar and Amsterdam
23. Utrecht - Hilversum
24. Amersfoort - Kesteren
25. Barneveld Junction - Ede Junction
26. Lage Zwaluwe - Breda
27. Dieren Doesburg Junction - Zwolle via Apeldoorn

28. Kampen - Zwolle - Almelo

29. Zwolle and Almelo - Emmen

30. Stavoren - Leeuwarden

31. Leeuwarden - Dokkum and branches

32. Achel - Belgian frontier - Eindhoven

33. Maastricht - German frontier - Aix la Chapelle

34. Sittard - German frontier - Aix la Chapelle (Aachen)

35. Schin op Geul - Heerlen

36. Mine branches system, South Limburg

These route numbers are assigned only for our convenience and do not indicate any local designation. The numbers are also used on the accompanying map.

Due to its large size, the following document has been filmed in segments. The order of the segments is as follows: left to right, top to bottom.

RAILROADS OF THE NETHERLANDS

- DOUBLE TRACK LINES
- SINGLE TRACK LINES
- ELECTRIFIED LINES
- LIGHT RAILROADS
- POWER STATIONS
- SUBSTATIONS
- RAILROAD WORKSHOPS
- IMPORTANT CLASSIFICATION YARDS
- 24 FIGURES DENOTE NUMBERS OF ROUTES INCLUDED IN APPENDIX

NORTH SEA

IJSSEL MEER

GERMANY

BELGIUM

ROODESKOOL
DELFZYL
DOKKUM
ZOUTKAMP
To BUNDE
NIEUWESCHANS
HARLINGEN
LEEUWARDEN
GRONINGEN
ASSEN
DEN HELDER
HEERENVEEN
STAVOREN
STEENWYK
EMMEN
MEDEMBLIK
TRAIN FERRY
MEPPEL
ENKHUIZEN
HOORN
ALKMAAR
KAMPEN
UITGEEST
ZWOLLE
IJMUIDEN
VELSEN
AMSTERDAM
ALMELO
WIERDEN
ZANDVOORT
HAARLEM
OLDENZAAL
To BERLIN
DEVENTER
HILVERSUM
AALSMEER
APELDOORN
ENSCHEDE
AMERSFOORT
ZUTPHEN
AHAUS
To DORTMUND
'S-GRAVENHAGE
LEIDEN
WOERDEN
UTRECHT
EDE
ARNHEM
DIEREN
KESTEREN
ZEVENAAR
WINTERSWYK
DELFT
GOUDA
HOOK OF HOLLAND
GELDERMALS
ROTTERDAM
NIJMEGEN
To WESEL
DORDRECHT
GENNEP
MOERDYK
GEERTRUIDENBERG
'S-HERTOGENBOSCH
To WESEL
BREDA
TILBURG
BOXTEL
ROOSENDAAL
EINDHOVEN
VENLO
To ANTWERP
FLUSHING
BLERIK
TERNEUZEN
HULST
To DE KLINGE
To ACHEL
ROERMOND
To M. GLADBACH
SAS VAN GENT
SUSTEREN
SITTARD
GEELEN
MAASTRICHT
To AACHEN
To VISE

0 10 20 30
MILES

0 10 20 30 40 50
KILOMETERS

MAP NO 600 JULY 25,1942

COMPILED AND DRAWN IN THE GEOGRAPHY DIVISION, O.S.S.

B. Some Details of the Railroad Routes

Route 1 - Flushing - Venlo - German frontier

Double track throughout, easy curvature, max. gradient 1 in 200, no high embankments or cuttings, important bridges only at Vlake and at Venlo.

Route 2 - Eindhoven - Roermond - German frontier

Branch route from Eindhoven, of route 1 from Flushing. Double track, easy curvature, max. gradient 1 in 200, no cuttings, high embankments only in approaches to bridge at Weert, important bridges at Weert and Roermond. Branch of this route from Belgian frontier at Hamont to Weert.

Route 3 - Boxtel - Gennep - German frontier

Branch route from Boxtel, of route 1 from Flushing. Single track, except sections of 2½ miles length out of Boxtel, and from Gennep on, across the frontier, which have double track. Easy curvature, max. gradient 1 in 200, no high embankments or cuttings, one important bridge at Oeffelt.

Route 4 - Hook of Holland - Utrecht - Zevenaar - German frontier

Double track throughout, easy curvature, max. gradient 1 in 200, high embankments only in approaches to bridges, few cuttings in Ede - Arnhem section, important bridges, past Schiedam, before Gouda, at Utrecht and at Westervoort. Marshy soil and weak embankment in the sections before and after Gouda. Electrified as far as Arnhem.

Route 5 - Zevenaar - Winterswyk, reversing to German frontier

Branch line of route 4 from Hook-of-Holland. Single track, no gradients, minimum radius curves 990 ft. no important bridges, no embankments or cuttings, heavy road bed, suitable for all main line trains, crossing loops are shorter than standard length accommodating trains of engine, 40 cars and a brake car.

Route 6 - Hook of Holland - Nijmegen - German frontier

Double track to Schiedam, four tracks to Rotterdam, double to Dordrecht, single to Sliedrecht, double to Gorinchem, single to Leerdam, double to Wadenoyen, single Kosteren, double to the frontier and beyond. Electrified sections: - Hook of Holland to Dordrecht, and Rossen-Bommel to Nijmegen. Easy curvature and gradients, high embankments only in approaches to the large bridges, only cutting between Nijmegen and Groesbeek, many important bridges, viz. Rotterdam, Dordrecht, Baanhoek, Geldermalsen, Oosterbeek, Nijmegen.

Route 7 - Ijmuiden - Oldenzaal - German frontier, and Enschede German frontier, via Deventer or Zutphen

Main route, via Deventer, double track throughout, except the single track bridge at Deventer. Four tracks section from Zaanstraat Junction to Muiderpoort Junction through the city of Amsterdam. Electric from Ijmuiden to Muiderpoort Junction. Only high embankments at approaches to bridges, only cuttings at Baarn, and between Assel and Apeldoorn. Only important bridges at Weesp and Deventer, also viaduct from Zaanstraat Junction to Amsterdam Central station, and a number of bridges in the Amsterdam town area. Curves of large rad., only sharp curve, entering Velzen station, rad. 924 ft.

Alternate parts of this route described in their own headings.

Route 8 - Zutphen - Winterswyk - German frontier

Branch of route 7 from Ijmuiden. Single track, except section Vordon-Ruurlo, which has double track, easy curvature and gradients, no high embankments, cuttings or important bridges.

Route 9 - Den Helder - Amsterdam via Zaandam and via Uitgeest

Connecting with route 7, Ijmuiden to German frontier, at Amsterdam or at Velzen. Single track from Den Helder to Hoorhugowaard, double track thence. Electric from Alkmaar to Amsterdam either way. Easy curvature and gradients, max. 1 in

150 in approaches to bridges at Velzen and Hembrug, no cuttings, high embankments in bridge approaches only. Important bridges at Velzen, Hembrug and through Amsterdam area. Small bridges and culverts at very short intervals.

Route 10 - Harlingen - Nieuwe Schans - German frontier

Single track to Groningen, double track Groningen-Winschoten, single track Winschoten-frontier, easy curvature and gradients, max. 1 in 150, for short lengths only, no high embankments, or cuttings or important bridges. Many culverts and small bridges.

Route 11 - Belgian frontier - Roosendaal - The Hague - Amsterdam

Double track, except Moerdyk bridge, which is single track, easy curvature and gradients, no cuttings, no high embankments, except in approaches to bridges, and in towns, important bridges at Moerdyk, Dordrecht, Rotterdam, Amsterdam. Electrified from Dordrecht to Amsterdam.

Route 12 - Belgian frontier - Roosendaal) - Utrecht - Amsterdam
Belgian frontier - Baarle Nassau)

This is an alternative to route 11.

Double track, except HEDEL bridge, which is single track, easy curvature and gradients, no cuttings, no high embankments, except in approaches to bridges, important bridges at Hedel, Zalt-Bommel, Geldermalsen, Culemborg, Utrecht, Amsterdam. Electrified from 's-Hertogenbosch to Amsterdam.

Route 13 - Belgian frontier - Maastricht - Zwolle

Double track to Roermond, single to Venlo, double to Blerik, single to Mook, double to Deventer, single to Zwolle. Electrified section from Nijmegen to Arnhem. Easy curvature and gradients, only cuttings in the frontier to Maastricht section, and approaches to Nijmegen and Arnhem, high embankments only in approaches to bridges, important bridges at Venlo. Mook, Nijmegen, Oosterbeek, Zutphen, and Deventer. The sections Blerik to Mook, and Arnhem

to Zutphen lie west of the rivers Maas and Ijssel, all the rest of this route east of these rivers. Alternative route between Roermond and Zwolle is provided, via Utrecht, routes 2, parts of 1 and 12, and 14. This alternative route enters Zwolle from the opposite direction and provides a through route to the north without reversing, whereas the direct route into Zwolle requires reversing of trains continuing north. Another alternate section - Dieren to Zwolle, route 27.

Route 14 - Utrecht - Zwolle - Groningen - Delfzyl

This route is a continuation of route 12 from the Belgian frontier to Utrecht, it is also part of an alternative to route 13, from the Belgian frontier near Maastricht to Zwolle and the North, without reversing anywhere. Double track to Groningen, single track between Groningen and Delfzyl and branches. Few, shallow cuttings between Utrecht and Zwolle, only high embankment in approaches to bridge before Zwolle, easy curvature and gradients. Important bridge at Zwolle.

Route 15 - Groningen - Delfzyl, Southern route

Single track, alternative route to 14, but entering Groningen station from the opposite end. Many curves, large radius, no embankments, no cuttings, many culverts and small bridges.

Route 16 - Meppel - Leeuwarden

Branch of route 14 to Friesland Province, also alternative to route 14 between Meppel and Groningen. Double track, without important embankments, cuttings or bridges, easy curvature and gradients. Numerous culverts and small bridges.

Route 17 - Moerdyk - 's-Hertogenbosch - Nijmegen

Single track, except sections 's-Hertogenbosch-Oss, and Wychen-Nijmegen, which are double track. This route is an alternative to route 6, between Dordrecht and Nijmegen.

1370

Easy curvature and gradients, no high embankments or cuttings, only bridge of some importance at Ravestein, across the

Route 18 - The Hague - Gouda

This route, double track, is a branch line from the Hague into route 4, Hook-of-Holland - Germany. Through very flat country, with many small bridges and culverts, no embankments, except in the approach to the bridges near Gouda, no cuttings, easy curvature and gradients. Electrified. Over most of the distance the motor trunk road from The Hague to the east runs parallel to the line on the left.

Route 19 - Leiden - Woerden and Gouda

This route is a branch line into route 4, from Hook-of-Holland to the German frontier, joining either at Woerden or at Gouda. Single track, no high embankments, cuttings or important bridges, easy curvature and gradients. Line traverses flat country, with numerous canals, small bridges and culverts.

Route 20 - Rotterdam - The Hague and Scheveningen

This electrified line is an alternative to route 11 between Rotterdam and The Hague, entering The Hague station however from the opposite direction. It is built on a very soft soil formation, it has no important embankments, nor cuttings, and only small bridges and culverts across the numerous canals and drains in its course. Curvature is easy, gradients are 1 in 100, but all of short length. Double track throughout.

Route 21 - Nieuwersluis Junction - Aalsmeer and Amsterdam branch

This is a light railway branch from Nieuwersluis Junction in the Utrecht-Amsterdam main line, route 12, through the Haarlemmermeer district, now having no other junctions with the main line system. Single track, light permanent way, but usable by main line trains. Short crossing loops, no high embankments or cuttings, many small bridges and culverts, curves down to radii

of 990 ft., gradients 1 in 150.

Route 22 - Enkhuizen and Medemblik - Alkmaar and Amsterdam

Branches from Enkhuizen and Medemblik, joining at Hoorn, thence to Alkmaar and Zaandan joining, at either station, route 9 from Den Helder to Amsterdam. Single track, easy curvature and gradients, no cuttings, important embankments or bridges. Many small bridges and culverts.

Route 23 - Utrecht - Hilversum

This route is an alternative to the Lunetten-Amsterdam section of route 12, from the Belgian frontier to Amsterdam. It is a by-pass avoiding Utrecht Central station. Double track, except the first short section from Lunetten Junction to Maliebaan station in Utrecht. Easy curvature and gradients, no embankments, cuttings or important bridges.

Route 24 - Amersfoort - Kesteren

This line is a link between route 7 from Ijmuiden, and route 6 from Hook-of-Holland to the German frontier past Nijmegen or Arnhem. Double track to Woudenberg, and from Rhenen, single in between. Easy curvature, few gradients, few embankments and cuttings. Important bridge at Rhenen.

Route 25 - Barneveld Junction - Ede Junction

Single track light railway, suitable for mail line trains, a link between route 7, from Ijmuiden, and route 4 from Hook-of-Holland to the German frontier. Easy curvature and gradients, no important cuttings, embankments or bridges.

Route 26 - Lage Zwaluwe - Breda

Double track line, connecting route 11, from the North, Rotterdam with route 1, from Flushing. It is also an alternative to route 17 from Lage Zwaluwe to 's-Hertogenbosch, via Breda and Tilburg. Straight line, no embankments, cuttings or important bridges.

Route 27 - Dieren Doesburg Junction - Zwolle via Apeldoorn

Alternative to route 13, crossing the Ijssel at Zwolle instead of Zutphen. Light railway suitable for main line trains. Single track, easy curvature and gradients, no embankments or cuttings, important bridge before Zwolle. Crossing loops in this line are shorter than standard.

Route 28 - Kampen - Zwolle - Almelo

Single track line connecting routes 14 from Utrecht and 27 from Dieren, with route 7 from Almelo to the German frontier. Easy curvature and gradients, no important embankments, cuttings or bridges.

Route 29 - Zwolle and Almelo - Emmer

Single track, standard gauge light railway, short crossing loops but otherwise suitable for main line trains. No severe gradients .or curves, no important bridges, few embankments, no cuttings.

Route 30 - Stavoren - Leeuwarden

This route connects with a train ferry from Enkhuizen, terminus of route 22 from Amsterdam, at the Stavoren end, and with route 10, from Harlingen to the German frontier at the Leeuwarden end. Single track, but formation and all bridge supports built for a second track. Easy curvature and gradients, no embankments, no cuttings, no important bridges, numerous small bridges and culverts.

Route 31 - Leeuwarden - Lokkum and branches

Single track, light railway, freight trains only, suitable for all main line trains, short crossing loops, easy curves and gradients, flat country, many culverts and small bridges.

Route 32 - Achel - Belgian Frontier - Eindhoven

Single track line from Neerpelt junction in Belgium. Connects at Eindhoven with routes 1 and 2 from Flushing in the dir-

ection towards the German frontier. Few curves and gradients, few cuttings, no bridges.

Route 33 - Maastricht - German Frontier - Aix La Chappelle (Aachen)

Double track to Simpelveld, thence single. Easy curvature, gradients, maximum 1 in 100. No important bridges.

Route 34 - Sittard - German Frontier - Aix La Chapelle (Aachen)

Double track to Heerlen, thence single. Easy curvature, gradients, maximum 1 in 80 for short lengths, several cuttings, embankments, small bridges and culverts. No important bridges.

Route 35 - Schin-Op-Geul - Heerlen

Double track line, connecting route between 33 and 34. Easy curves, gradients to 1 in 100, high embankments, deep cuttings, small bridges and culverts.

Route 36 - South Limburg Coal Mines Railway System

All South Limburg coal mines, State and private ownership, are connected with each other, with the main lines and with the South Limburg waterways, by a system of railways owned and operated by a separate Mines Railways Department, headquarters at Heerlen. This railway system consists of a network of single track lines, with large freight and storage yards at each coal mine. The system has junctions with the Netherlands Railways lines at:-

Lutterade, in route 13
Simpelveld, in route 33
Nuth, Schaesberg and Kerkrade, in route 34

3 spurs connect the system with loading platforms on the Juliana Canal:

i. from Lutterade, route 13, and from Nuth, route 34, to STEIN, with several sidings at Stein, hand-loading into barges at Stein.

ii. from Sittard, route 13, and route 34, to BORN; this is the most important spur, double track, with 5 groups of sidings, 16, 14, 5, 13, 10 tracks, mostly of train length, alongside the Juliana Canal and a special coal dock, and mechanical loading plant.

iii. from Echt, route 13, to Maasbracht on the Maas, single track, fewer sidings, now less used since i & ii have been brought into operation on the opening of the Juliana Canal.

THE NETHERLANDS

Mileage Chart

(To the Nearest Mile)

	Amsterdam	Alkmaar	Almelo	Amersfoort	Antwerp	Apeldoorn	Arnhem	Bergen Op Zoom	Breda	Brussels	Delft	Delfzijl	DeVenter	Dordrecht	Eindhoven	Enkhuizen	Enschede	Gorinchem	Gouda	's-Gravenhage	Groningen	Haarlem	Harlingen	Helder (Den)	Hengelo	's-Hertogenbosch	Hilversum	Hoek v. Holland	Kampen	Leeuwarden	Leiden	Maastricht	Middelburg	Nijmegen	Roermond	Rotterdam	Sneek	Tilburg	Utrecht	Venlo	Vlissingen	Zutphen	Zwolle
Amsterdam	-																																										
Alkmaar	22	-																																									
Almelo	88	111	-																																								
Amersfoort	29	51	60	-																																							
Antwerp	99	116	148	86	-																																						
Apeldoorn	55	76	35	25	111	-																																					
Arnhem	58	80	51	29	97	17	-																																				
Bergen Op Zoom	93	103	142	80	22	105	91	-																																			
Breda	70	27	118	56	30	81	67	24	-																																		
Brussels	130	146	178	116	30	142	127	53	60	-																																	
Delft	37	51	110	48	68	73	76	52	38	98	-																																
Delfzijl	152	130	92	122	208	102	119	202	178	239	172	-																															
DeVenter	64	86	24	35	121	9	27	114	91	151	85	100	-																															
Dordrecht	58	72	111	51	47	76	65	33	17	77	21	173	86	-																														
Eindhoven	77	99	107	63	53	67	50	59	35	78	73	169	77	52	-																													
Enkhuizen	34	26	124	63	134	89	93	126	104	164	71	126	98	91	111	-																												
Enschede	99	121	14	70	146	44	49	140	116	176	119	105	35	114	99	133	-																											
Gorinchem	50	71	95	35	51	60	49	45	21	80	37	157	70	15	43	84	98	-																										
Gouda	32	55	92	32	71	57	58	55	39	101	17	154	66	24	75	66	101	24	-																									
's-Gravenhage	33	47	111	48	72	76	78	57	42	103	4	170	86	45	78	67	120	41	18	-																								
Groningen	132	110	72	104	190	83	100	183	160	220	154	19	81	155	150	107	86	139	135	150	-																							
Haarlem	12	19	101	41	101	66	70	85	71	131	33	148	76	54	89	44	111	60	37	29	128	-																						
Harlingen	80	58	98	109	174	99	117	158	144	204	106	71	98	130	157	55	112	130	113	102	52	76	-																					
Helder (Den)	49	26	139	78	142	104	107	129	112	172	77	110	113	98	126	41	148	99	81	73	90	44	39	-																				
Hengelo	93	116	8	65	144	39	47	137	114	174	114	99	29	111	97	127	6	96	96	115	81	105	108	141	-																			
's-Hertogenbosch	58	80	91	45	57	57	40	51	27	88	63	158	66	42	19	93	89	24	43	61	140	70	139	107	86	-																	
Hilversum	18	40	72	12	84	37	41	78	55	115	48	134	47	50	62	52	81	34	30	50	116	30	98	67	77	44	-																
Hoek v. Holland	44	58	130	65	80	91	92	64	50	110	12	181	100	33	85	78	135	48	34	11	160	40	109	84	129	75	64	-															
Kampen	72	94	39	43	129	27	43	122	99	159	93	83	30	94	94	106	53	78	75	94	63	84	80	112	47	83	55	108	-														
Leeuwarden	97	75	80	101	187	81	98	175	158	217	123	55	79	144	148	72	94	136	126	122	35	93	17	55	89	137	113	129	61	-													
Leiden	24	37	105	45	82	70	71	66	52	112	14	163	80	35	85	58	114	50	18	10	145	19	95	63	110	66	43	22	88	113	-												
Maastricht	140	162	145	124	67	111	94	89	98	59	136	213	121	115	63	174	144	106	124	140	194	152	212	189	141	81	125	148	138	192	147	-											
Middelburg	130	139	179	117	52	141	127	37	60	83	89	239	151	70	95	163	176	81	93	96	219	122	198	165	175	87	114	101	160	214	106	119	-										
Nijmegen	69	91	62	40	86	27	11	80	57	117	79	129	37	63	40	103	10	47	69	88	111	81	127	118	51	29	51	96	54	108	81	84	116	-									
Roermond	110	132	116	94	75	81	65	92	68	85	106	185	92	85	33	145	114	76	94	111	165	122	181	155	111	52	95	118	108	162	117	30	128	54	-								
Rotterdam	47	60	104	44	58	70	71	43	29	89	10	167	79	12	64	81	114	27	12	13	148	42	119	86	109	52	43	21	87	135	24	127	80	75	97	-							
Sneek	84	61	80	103	176	81	99	165	150	205	104	70	79	134	149	61	96	136	116	104	50	79	17	47	90	139	104	114	62	15	99	193	204	109	163	123	-						
Tilburg	72	94	104	58	43	70	53	37	14	74	52	172	80	30	22	106	103	28	53	56	153	81	152	121	100	14	57	63	126	151	66	85	73	43	55	42	152	-					
Utrecht	25	47	72	12	74	37	39	68	44	104	43	134	47	39	52	60	81	24	20	39	116	37	106	75	77	33	11	53	55	113	33	114	104	49	85	32	115	47	-				
Venlo	106	128	100	78	86	66	49	99	75	97	113	168	76	92	40	140	98	76	107	116	149	118	166	155	96	52	90	124	93	147	118	45	135	39	16	104	148	62	85	-			
Vlissingen	135	144	183	121	57	145	131	42	64	87	94	244	156	75	99	168	180	85	97	100	224	127	202	170	179	91	119	101	164	219	110	124	4	121	132	85	209	78	108	139	-		
Zutphen	68	90	29	39	116	14	19	109	86	146	89	109	9	83	69	103	34	68	71	90	91	80	107	117	28	58	51	104	39	88	84	113	145	29	83	88	89	72	51	68	150	-	
Zwolle	72	94	30	43	129	23	40	123	99	160	93	80	21	94	90	107	44	78	75	94	60	85	77	109	39	80	55	109	9	58	88	135	160	50	104	93	59	93	55	89	165	30	-

FREE NO. 679 GEOG. DIV. O.S.S.

APPENDIX XXI

Some Vital Roads in Southern and Western Netherlands

To facilitate classification of highways the following table of classification is given. The numbers do not refer to any official classification and have been arbitrarily assumed for purposes of this report only.

	Capacity of Traffic up to					
	40 tons	25 tons	18 tons	9 tons	3 tons	Pack Transport
2 streams of traffic	A 1	A 2	A 3	A 4	A 5	A 6
1 stream of traffic with some passing	B 1	B 2	B 3	B 4	B 5	B 6
1 stream of traffic only	C 1	C 2	C 3	C 4	C 5	C 6

The following roads are described:

(The number has no reference to local road number)

1. Alkmaar - Amsterdam
2. Amsterdam - Breda
3. Amsterdam - Hasselt, Belgium
4. Amsterdam - Amersfoort
5. Rotterdam - Antwerp
6. Antwerp - Willemstad
7. Eindhoven - Turnhout, Belgium
8. Bergen op Zoom - Hollandschdiep
9. Breskens - Hulst
10. Brielle - Rotterdam
11. 's - Hertogenbosch - Turnhout, Belgium
12. Flushing - Roermond
13. Haarlem - Amsterdam
14. The Hague - Amsterdam
15. The Hague - Breda
16. The Hague - Utrecht
17. Den Helder - Hook of Holland
18. Den Helder - Den Oever
19. Hook of Holland - Rotterdam
20. Ijmuiden - Amsterdam
21. Leiden - Amersfoort
22. Den Oever - Amsterdam
23. Roermond - Maastricht
24. Rotterdam - Gouda
25. Terneuzen - Ghent
26. Zierikzee - Etten

Rd. No. 1 - Alkmaar - Amsterdam, via Zaandam

Class A 3. Distance 23 miles.

a. Description

An important bituminous secondary road, suitable for military trucks and light tanks. It leaves main coastal road and crosses open and often marshy polderland towards Amsterdam. Ferry across Noord Zee Kanaal.

From Alkmaar - Krommenie: 12-1/2 miles - Ditches about 4-8 ft. wide and 4 ft. deep flank the road, which is slightly embanked.

From Krommenie - Zaandam: 5 miles. Polderland intersected by many drainage canals — may be marshy in winter. Deep ditches, road reported 5-10 ft. above general level of land.

From Zaandam - Amsterdam; 5 1/2 miles. Shallow ditches, road above the general level of land.

b. Construction

Two-way traffic on bituminous surface---about 20 ft. wide.

Brick surface in villages and in Zaandam.

New road in concrete reported under construction in 1940. Present condition good but not substantially improved since 1925.

c. Bridges and Ferries

R.R. bridge over the road at entry to Amsterdam.

Between Krommenie and Zaandam many brick arch culverts of 5-10 ft. span. Ferry at Hembrug.

Road 2. Amsterdam - Breda - Antwerp, via Utrecht,Gorinchem

Class A 1 - A 2. Distance 65 1/2 miles.

a. Description

Main route between Netherlands and Belgium, suitable for most military traffic on varying surface. Crosses Rhine, Waal and Maas by major bridge or ferry. After Breda it enters drier sandy country.

Amsterdam to Utrecht: 25-1/2 miles. Normally a deep drainage ditch about 8-15 ft. wide along one side of road and a shallow ditch 4-8 ft. wide and 4 ft. deep along the other side. Road is normally above the general land level.

Utrecht - Gorinchem: 18 3/4 miles. Crosses several broad rivers in a stretch of low lying polder country. Shallow ditches between Utrecht and Meerkirk, after Meerkirk there is a deep ditch on the east side of the road.

Gorinchem - Breda: 21 1/4 miles, crosses several broad rivers in a stretch of polder country with very marshy land on the west. Shallow drainage ditches on both sides. Road is on a slight embankment with steep profile.

Breda to Antwerp: 33 miles. Shallow ditches, road line on same level as surrounding country. Crosses mostly firm sandy soil.

b. Construction

	Width		
Amsterdam - Utrecht	20-25 ft.	Brick and asphalt	
Utrecht - Vianen	20 1/2 ft.	Concrete slabs and asphalt	From Utrecht to Vianen: Cycle paths in concrete & brick about 8 1/2 ft. wide.
Vianen-Geertruidenberg	20-25 ft.	Macadam	
Geertruidenberg-Antwerp	25-30 ft.	Granite cobbles asphalt & concrete	Between Breda & Antwerp cycle track along 1 side

c. Condition

Amsterdam - Utrecht: fairly good in spring of 1940. An A 2 road. A National Highway under construction to the west of the road.

Utrecht - Vianen: good in 1940: completed National Highway. An A 1 road.

Gorinchem - Keizerveer: improved since 1938. National Highway under construction. An A 2 road.

Keizerveer - Breda: improved recently. A 2 road.

Breda - Antwerp: good and well maintained in 1941. A 1 road.

d. Bridges and Ferries

Level crossings at Amsterdam, Abcoude, Nieuwesluis, Rietveld, Geertruidenberg, Breda.

Railroad bridges over the road at: Utrecht (2), Antwerp.

There are 20 culverts of brick arch or concrete between Amsterdam and Antwerp. Ferry at Gorinchern.

Road No. 3. Amsterdam-Hasselt, Belgium via Utrecht, 's-Hertogenbosch, Eindhoven

Class A 1 - A 5

a. Description

Main route from Netherlands to eastern Belgium suitable for most military traffic on varying surface. Crosses rivers Rhine, Waal and Maas, by major bridges. After 's-Hertogenbosch it enters drier sandy soil with scattered woods.

Amsterdam - Utrecht: see above. (Road 2)).

Utrecht - 's-Hertogenbosch: 33 miles. Road crosses the main rivers by major bridges and crosses low-lying polderland and some patches of marshy woodland. Ditches about 12 ft. wide and 6 ft. deep.

's-Hertogenbosch - Eindhoven: 20 1/2 miles. Shallow ditches, road lies on general land level.

Eindhoven - Hasselt: 38 miles. Crosses the marshy river valleys of southern Kempen and enters the well-wooded area of the Belgian Campine. Shallow ditches, road embanked in more marshy areas.

b. Construction

Amsterdam - Utrecht: 20 ft. wide, surfaced in brick and asphalt.

Utrecht - 's-Hertogenbosch: 20 1/2 ft. wide, concrete-slabs and asphalt, cycle paths in concrete and brick about 8 1/2 ft. wide.

's-Hertogenbosch-Hasselt: 25-30 ft. wide, macadam surface, foundation of granite cobbles.

c. Condition

Amsterdam - Utrecht: fairly good, spring of 1940 .Class A 2 road.

National Highway under construction to west of road.

Utrecht - 's-Hertogenbosch: completed National Highway; Class A1 .

's-Hertogenbosch - Hasselt: reported poor 1939; Class A 5

d. Bridges and Ferries

Level crossings at Amsterdam, Abcoude, Nieuwesluis

Rietveld, 's-Hertogenbosch, Boxtel, Eindhoven, Valkensward, near de Groote Barrier, de Dool, 2 at Hasselt.

Railroad bridges over the road at Utrecht (2), Eikenen.

There are many culverts of brick arch and concrete over drainage canals or small streams. Can carry 25 tons.

Ferry at Zaltbommel.

Road No. 4 Amsterdam - Amersfoort

Class A 1. Distance 29 3/4 miles.

a. Description

Main road from Amsterdam southeast towards Arnhem and the German frontier.

Asphalt and concrete surface suitable for all military traffic.

Amsterdam - Bussum: 14 1/4 miles. Between Diemerburg and Naarden a small canal about 20 ft. wide and 6 ft. deep, on one side and a shallow ditch on the other. Road level above general land level.

Bussum - Amersfoort: 15 1/2 miles, shallow ditches

Road lies at general land level.

b. Construction

Two to four-way traffic. Asphalt and concrete surface.

c. Condition

Good in 1940. Repair and reconstruction of some sections for four-way traffic with 2 cycle paths each 8 1/2 ft. wide. Class A 1.

d. Bridges

Railroad bridges over road at Amsterdam, Diemerburg, Baarn, Soestdijk, Amersfoort (2).

Road No. 5 Rotterdam - Antwerp, via Bergen op Zoom and Willemstad

Class A 2 to A 3. Distance 65 1/4 miles.

a. Description

An important coastal secondary road. Good for lighter military vehicles. May have been damaged severely in fighting in 1940.

Antwerp - Bergen op Zoom: 23 miles. Between Putte and Bergen op Zoom shallow ditches. Road lies at general land level.

Bergen op Zoom - Rotterdam: 42 1/4 miles. In low-lying polder-land, in some places follows dike surface. Crosses Hollandschdiep by ferry. Ditches 5 ft. wide 3/4 ft. deep. Between Numansdorp and

Heinenoord waterway follows the road. Road embanked 8-10 ft. in stretches, especially north of Numansdorp.

b. Construction

Antwerp - Putte: 30 ft. wide, granite cobbles and cobblestone surface, cycle path in gravel 4 ft. each side. Class A 2.

Putte - Korteven: 20-25 ft. wide, cobblestone and brick surface. Class A 3.

Korteven - Halsteren: 20 ft. wide, brick surface. Class A 2.

Halsteren - Willemstad: 22 ft. wide, Macadam surface. Class A 2.

Willemstad - Rotterdam: 20-25 ft. wide, Bitumen and brick. Class A 2.

c. Condition

Between Antwerp and Willemstad road was in part destroyed by heavy fighting in 1940 but entirely repaired by November, 1941. North of Bergen op Zoom improvement begun in 1939.

d. Bridges and Ferries

Level crossing at Cappellen.

Railway bridge over road at Antwerp.

Minor bridges and culverts over drainage ditches in polder country about 10-20 ft. long.

Ferry at Willemstad.

Road No. 6 Antwerp - Willemstad, via Cappellen, Roosendaal and Oud Gastel

Class A-3 to B-4. Distance 41 1/2 miles.

a. Description

A secondary road connecting Antwerp to Willemstad. Useful alternative route over a part of the country with few good roads. Pavingstone and macadam surface.

Unsuitable for heavy military vehicles.

Antwerp - Roosendaal: 27 1/4 miles. Between Antwerp and Cappellen the built-up area is continuous. At Calmpthout the road is joined by a secondary road 20 ft. wide. Shallow ditches flank the road which is about 2-3 ft. above ground level.

Roosendaal - Willemstad: 14 1/4 miles, crosses polderland, follows dike surface for stretches; also ditches 5-8 ft. wide and 3-5 ft. deep.

b. Construction

Antwerp-Cappellen: 30 ft. wide, pavingstone and granite cobble surface.

Cappellen - Roosendaal: 10 ft. wide, pavingstone surface.

Roosendaal - Oud Gastel: 20-25 ft. wide, macadam.

Oud Gastel - Willemstad: 20 ft. wide, brick and pavingstone.

c. Present condition

Perhaps partly destroyed during invasion. Class A 3.

d. Bridges and Ferries

Level crossings at Cappellen, Calmpthout, Wildert, Kalfsdonk (2)

Railroad bridge over road at Antwerp. No ferries.

Road No. 7 Eindhoven - Turnhout, Belgium

Class A 4. Distance 27 1/2 miles.

a. Description

A secondary route. Surface in macadam or concrete. Crosses slightly hilly country being drier and more sandy in the Dutch area. Ditches of normal type, road lies on ground level.

b. Construction

20 ft. wide, Macadam surface, concrete cycle path 4 ft. wide.

c. Condition

Good up to ten-ton load. Class A 4.

d. Bridges and Ferries

Level crossing at Turnhout.

Railroad bridge over road at Eindhoven.

Several culverts, 8 ft. long, and capable of bearing 25 tons.

No ferries.

Road No. 8 Bergen op Zoom - Hollandschdiep

Class A 3. Distance 27 3/4 miles.

a. Description

Winding road, best secondary route between Bergen op Zoom and

great river estuaries, avoiding the town of Breda. Suitable for motor transport, surface in pavingstone and macadam.

Bergen op Zoom - Oud Gastel: 11 3/4 miles, ditches of normal size.

Crosses low-lying sandy country.

Oudgastel - Hollandschdiep: 16 miles, crosses polder with parts along dike top. Deep ditches, on either side the ground liable to become marshy in winter.

b. Construction

16-20 ft. wide, pavingstone and macadam surface.

c. Condition

May have been severely damaged during invasion.

National Highway under construction to the west of this road. Class A 3.

d. Bridges and Ferries

Level crossings at Bergen op Zoom and Wouw.

Culverts are brick arch construction.

No ferries.

Road No. 9 Breskens - Hulst- Along Belgian frontier, via Ijzendijke and Sas van Gent.

Class B 4 .Distance 35 3/4 miles.

a. Description

A secondary road of pavingstone for light motor transport, leading from the Schelde estuary port of Breskens to main base port and industrial area of Antwerp.

From Breskens crosses open polderland with many drainage ditches, Along stretches where the road is embanked there are deep ditches.

b. Construction

Breskens - Schoondyke: 20 ft. wide, paving stone surface.

Schoondyke - Ijzendijke: 20 ft. wide, brick surface.

Ijzendijke - Hulst: 20 ft. wide, brick and paving stone. Asphalt for 2 miles near Axel.

c. Condition

Improved in 1939. Paving stone may be in bad condition as result of use by military traffic during 1940.

Class B 4 road.

d. Bridges and Ferries

Level crossings at Dreckwart and Hulst.

No ferries.

Road No. 10 Brielle-Rotterdam, via Spijkenisse

Class A 4 . Distance 20 3/4 miles.

a. Description

A secondary road from Brielle, on island of Voorne, to Rotterdam. Asphalt surface suitable for light military transport. Ditches 3-8 ft. deep and 12-15 ft. wide for certain stretches. Follows dike top part of the way.

b. Bridges

Several culverts spanning small streams or minor drainage canals.

No ferries.

Road No 11 's-Hertogenbosch - Turnhout, Belgium

Distance 33 miles.

a. Construction

Turnhout - Tillburg: 25 ft. wide, paving stone surface, stone foundation.

Tilburg - 's-Hertogenbosch: 25-30, paving stone, asphalt surface; this is reported also as new tarmacadam section of the National Highway.

b. Condition

The Turnhout-Tilburg section not suitable to all military loads. Tilburg-'s-Hertogenbosch is good and Class A 1.

c. Bridges

Level crossings at Nylen, Herenthals, Vught.

RR. bridges over rd. at Herenthal, Tilburg (2). Many stone arch culverts capable of bearing all military loads.

No ferries.

Road No. 12 Flushing - Roermond, via Middelburg, Bergen op Zoom, Breda, Tilburg, Endhoven and Weert.

Class A 1 - A 2. Distance 137½ miles.

a. Description

In the province of Zeeland this is the most suitable road for continuous and heavy military traffic. A fine approach road from Flushing to the province of Limburg and the Rhineland. Crosses polder country to Bergen op Zoom and then enters drier sandy country. Marshy areas between Eindhoven and Roermond.

b. Construction

Flushing-Middleburg: 20 ft. wide, concrete and asphalt surface.

Middleburg-Nieuweland: 20 ft. wide, brick surface.

Nieuweland-Sloedam: 20 ft. wide, brick surface for part on dike top.

Sloedam: 20 ft. wide, brick surface, cycle path of 8 ft.

Sloedam-Goes: 20 ft. wide, brick surface, for part of the way it follows the dike top.

Goes-by-pass: 20 ft. wide, concrete surface.

Kloetinge-Kruiningen: 20 ft. wide, concrete, edging of cheaper material 2 or 3 ft. each side, cycle path of concrete 8½ ft. each side.

Kruiningen-Rilland: 30-40 ft. wide, asphalt surface, cycle paths of 8½ ft. each side.

Rilland-Korteven: 20 ft. wide, concrete surface, laid at time of invasion.

Korteven-Bergen op Zoom: 30 ft. wide, brick and cobblestone surface.

Bergen op Zoom-Wouw: 30 ft. wide, paving stone and asphalt surface.

Wouw-Roosendaal: 30 ft. wide, concrete surface.

Roosendaal-by-pass: 30 ft. wide, concrete surface.

Roosendaal-Breda: 30 ft. wide, concrete surface, reported cycle path 8½ ft. wide on each side.

Breda-Tilburg: 30 ft. wide, concrete and macadam, cycle path of 8½ ft. each side.

Tilburg-Best: 30 ft. wide, macadam with bitumen cover, cycle path of 8½ ft.

Best-Eindhoven: 30 ft. wide, macadam, paving stone surface, cycle path.

Eindhoven-Geldrop: 20 ft. wide, asphalt & paving stone, cycle path of 8½ ft.

Geldrop-Roermond: 20 ft. wide, asphalt, cycle path of 8½ ft.

c. Condition

Flushing-Nieuweland: good for all military traffic; the National Highway not started in 1940.

Nieuweland-Heer Arendskerke: temporarily improved stretch. Repairs complete 1941.

Heer Hendrikssloten-Kruiningen: partly completed stretch of National Highway. In use for heavy traffic in 1941.

Kruiningen-Rilland: just completed.

Rilland-Korteven: reported completed stretch of the National Highway. Suitable to all military traffic, 1941.

Korteven-Tilburg: resurfaced 1940. Roosendaal and Breda by-pass reported complete.

Tilburg-Eindhoven: temporarily completed stretch. National Highway not begun in 1940.

Eindhoven-Moorheeze: resurfaced 1940.

Moorheeze-Kelpen: provincial road with good surface. Good for all military traffic.

Kelpen-Roermond: temporarily repaired; now suitable for all military traffic.

d. Bridges and Ferries

Level crossings at Flushing, Middelburg, Heer Arendskerke, Krabbendijke, Bergen op Zoom, near Wouw, Tilburg, Best, Eindhoven, Geldrop, Heeze, Bosch, Weert.

R.R. bridge over road at Korteven.

Minor bridges or culverts in stone arch and concrete capable of bearing all military loads. No ferries.

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Road No. 13 Haarlem-Amsterdam

Class A 1, Distance 11 3/4 miles.

a. Description

Connected with coast at Zandvoort by 2 macadam roads. After Haarlem a bituminous and paving stone road suitable for all military traffic runs directly across polder country to Amsterdam. Canal north of road is 15-20 ft. wide and 12 ft. deep, and a R.R. embankment on north side. On south side a ditch 2 ft. wide and 2 ft. deep.

b. Construction

Bituminous surface with paving stone stretches. Suitable for 3 way traffic. Width 35 ft. Cycle path of concrete 8½ ft. wide. Reported in excellent condition in 1941.

c. Bridges and Ferries

Several small concrete culverts capable of bearing all military loads. No ferries.

Road No. 14 The Hague-Amsterdam.

Class A 1. Distance 35 miles,

a. Description

A completed stretch of the National Highway suitable for all military traffic. Crosses sandy lowland becoming level polder country, many drainage canals. Several major bridges of concrete.

Hague-Sassenheim: 15 miles long. Several excellent alternative routes between 40 and 50 ft. wide of macadam surface passing through the Haagsche Bosch, south of the road. At Sassenheim-branches from the Hague-Den Helder road. Shallow ditches. In the country the secondary road system is well-developed with many concrete and macadam branch roads suitable for the heaviest military traffic. The main road is supplemented to the west by several such excellent roads.

Sassenheim-Amsterdam: 20 miles, enters the Haarlemmermeer polder across the Ringvaart and low-lying ground with many drainage canals. Two-way traffic with macadam and brick surface. Ditches several ft.

1370

wide and deep. Road about 4-10 ft. above general ground level.

b. Construction

Hague-Sassenheim: 40-50 ft. wide, asphalt surface, cycle paths of 8½ ft. each side after leaving The Hague.

Sassenheim-Sloten: 2 roadways each 20½ ft., concrete and asphalt surface. Cycle path of brick or concrete 8½ ft. wide, both sides.

Sloten-Amsterdam: 40-50 ft. wide, asphalt; cycle path on 1 side, 8½ ft. wide.

c. Condition

Hague-Sassenheim: Resurfaced and completely repaired 1938. Class A 1

Sassenheim-outskirts of Amsterdam. Completed stretch of National Highway. Suitable for continuous traffic-all types. Class A 1.

d. Bridge and Ferries

No ferries.

Road passes under R.R. bridge at Marlot and Warmond.

Several minor bridges and culverts capable of bearing all military loads.

Road No. 15 The Hague-Breda, via Rotterdam and Dordrecht.

Class A 1. Distance 34¼ miles.

a. Description

National Highway under construction in some sections. Suitable for all military traffic. Surfaced in concrete or asphalt. Crosses open polders in the estuaries of rivers Rhine, Waal and Maas. Several major bridges.

b. Construction

The Hague-Rijkswijk: 36 ft. wide, concrete, macadam and brick surface.

Rijkswijk-Overschie: Two roadways, each of 20½ ft., concrete surface. Central parkway of 15 ft. Narrower border of cheaper material at each side of roadway. Cycle track of brick or concrete 8½ ft. wide.

Overschie-Rotterdam: 36 ft. wide, macadam or brick surface.

Rotterdam-Moerdijk: 40 ft. wide concrete surface, cycle path on each side.

Moerdijk-Zevenbergschenhoek: 30-40 ft. wide, concrete surface. Cycle path at each side 8½ ft. wide.

Zevenbergschenhoek-Breda: 25 ft. wide, asphalt surface.

c. Condition

The Hague-Moerdijk: completed National Highway suitable for continuous use by heaviest traffic. Class A 1.

Moerdijk-Zevenbergschenhoek. National Highway temporarily completed and suitable for use by heaviest traffic. Class A 1.

Zevenbergschenhoek-Breda: National Highway under construction. Present road temporarily improved after 1938, and is suitable for all military traffic. Class A 1.

d. Bridges and Ferries

Level crossings at Zevenbergschenhoek and Breda.

Railway bridges over the road at The Hague and Rotterdam. Several minor bridges and culverts of 5-10 ft. suitable for all military traffic.

No ferries.

Road No. 16 The Hague-Utrecht.

Class A 1. Distance 36 miles.

a. Description

A completed stretch of National Highway suitable for all types of military traffic. Crosses open polders. Many concrete bridges suitable for the heaviest loads. Leaves The Hague with two traffic lanes each suitable for 2 or 3 way traffic. National Highway with double roadway begins in suburb of Voorburg.

b. Construction

2 roadways, each of 20½ ft. divided by a parkway of 15 ft. Border of several ft. of brick at each side of roadway. Cycle paths each of 8½ ft. In some stretches sidewalks at each side of cycle tracks, each 8 ft.

Hague-Gouda: concrete (75% cement, 17% masonry, 6% bitumen) 7 in. thick.

Gouda-Utrecht: Asphalt, with concrete stretch near Utrecht.

c. Condition

Suitable for all military traffic continuously.

d. Bridges

Railway bridges over the road at The Hague, Nootdorp, Gouda. Many concrete culverts over drainage ditches invisible from road. Often these are 100 ft. long. Bear all military loads. No ferries.

Road No 17 Den Helder-Hook of Holland, via Alkmaar, Haarlem, The Hague.

Class A 1. Distance 85 miles.

a. Description

Main coastal road. At intervals there are secondary roads inland from the coastal towns.

Den Helder-Alkmaar: 24 3/4 miles, runs along west bank of Noordhollandsch Canal, ditches several ft. wide and deep on west, and east is the Canal about 50 ft. wide, 21 ft. deep. Canal crossed by wooden bridge of very limited capacity.

Alkmaar-Haarlem: 19 3/4 miles, crosses Noord Zee Canal by ferry at Velzen. At intervals there are secondary roads inland from the coast suitable to 2 way traffic. Ditches are shallow.

Haarlem-The Hague: 26 3/4 miles at Oude Rijn. It is joined by the National Highway from Amsterdam to The Hague. There is an excellent system of secondary roads suitable for heavy traffic.

The Hague-Hook of Holland: 13 3/4 miles. Several roads from The Hague suitable for heavy traffic. Roads are wide enough for 4 lines of traffic. There is a fairly well-developed secondary system but many of these roads follow the dike top and are not suitable for heavy traffic.

b. Construction

Den Helder-Velzen: 25-30 ft. wide, macadam and paving brick surface.

Volzen-Sassenheim: 30 ft. wide. Bitumen and brick surface.

Sassenheim-The Hague: 40 to 50 ft. wide, asphalt surface. Cycle paths of 8½ ft. each side.

The Hague-Hook of Holland: 20 ft. wide, brick and macadam surface. An occasional cycle path.

c. Condition

Den Helder-Alkmaar: temporarily improved in 1938-39. New branch with Den Oever leaves road near Alkmaar.

Alkmaar-Volzen: improved in 1939. Good condition for all military traffic.

Volzen-Haarlem: temporarily improved in 1938-39.

Haarlem-Sassenheim: improved 1939. Good condition for all military traffic.

d. Bridges and ferries

Level crossings at De Kooy and The Hague.

Railway bridges over the road at Alkmaar, Castricum, Beverwijk, Haarlem, and near Sassenheim.

Ferry at Volzen.

Road #18. Den Helder-Den Oever
Class A1. Distance 15½ miles.

a. Description

Suitable for all military traffic. From the coastal port and naval base of Den Helder to the beginning of the National Highway across the Ijssel Meer. Runs along the west bank of Noord Zee Canal, crosses it at De Kooy. Crosses sluice gates and it is continued by the road across the Zuider Zee Dam to Snock. The secondary road system is poorly developed.

b. Construction

Den Helder-De Kooy: 25 ft. wide, macadam and paving stone surface with a brick section leaving Den Helder.

De Kooy-Den Oever: 25 ft. wide, concrete and brick surface.

c. Condition

Den Helder-De Kooy: temporarily improved in 1939. Class A 1.

De Kooy-Den Oever: resurfaced 1939. National Highway under constuction to the south of the road. Class A 1.

d. Bridges and Ferries

3 brick culverts of several feet span and a bridge at De Kooy.

No ferries.

Road #19. Hook of Holland-Rotterdam.
Class B2. Distance 21½ miles.

a. Description

An asphalt and brick road suitable up to 25 tons. Runs along the top of the dike almost all the way. Secondary road system is poor. At Maasslius a concrete branch leads to the National Highway under construction north of the town.

b. Construction

Hook of Holland-Vlaardingen: 15-20 ft. wide, asphalt surface.

Vlaardingen-Rotterdam: 20 ft. wide, brick surface.

c. Condition

Reported suitable for heavy trucks but many places permit only 1 way traffic. The section of National Highway from Rotterdam-Maasslui

is reported complete.

d. Bridges and Ferries

Level crossings at Hook of Holland, Maassluis, near Vlaardingen, and Schiedam.

No ferries.

Road #20. Ijmuiden-Amsterdam Via Velzen
Class A 1. Distance 16½ miles.

a. Description

Suitable for heavy military traffic. Ditches, embankments and soft ground flank the road. This road is suitable for at least 2 way traffic. After Velzen the secondary road system is poor.

b. Construction

Asphalt surface, about 30 ft. wide, occasional cycle paths of concrete and brick, 8½ ft. wide.

c. Condition

A National Highway good for all military traffic.

d. Bridges and Ferries

R.R. bridge over road at Velzen and Sloterdijk.

No ferries.

Road #21. Leiden-Amersfoort Via Utrecht
Class B2 to A1. Distance 46 3/4 miles.

a. Description

A secondary route leading from the main road from The Hague to Den Helder. This road crosses level polder country and by a finished section of the National Highway it continues to Amersfoort.

b. Construction

Leiden-Bodegraven: width 18 ft., surface-brick.

Bodegraven-Utrecht: width 18 ft., surface-brick and macadam.

Utrecht-Amersfoort: width 30 ft., surface-concrete and asphalt, and cycle path of 8½ ft. each side.

c. Condition

Leiden-Bodegraven: provincial type road, unimproved for last 10 years, Class B-2.

Bodegraven-Utrecht: improved since 1938, good for traffic to 25 tons, Class B-2.

Utrecht-Amersfoort: good for all traffic. Class A-1.

d. Bridges and Ferries

Level crossings near Woerden, at Utrecht.

R. R. bridge over road at Utrecht.

Many brick arch culverts over drainage canals with width of 5-10 ft., capable of bearing at least 10 tons.

No ferries.

Road #22. Den Oever-Amsterdam, via Hoorn
Class A-4. Distance 43½ miles.

a. Description

Most direct route from Zuider Zee Dam at Den Oever to Amsterdam.

Crosses open polder country of the new Wieringermeer polder.

Crosses Noord Zee Canal by ferry. Many stone arch culverts and wooded drawbridges. From Hoorn there are 2 roads, a western through Purmerend and a western road through Edam. Latter is better for military traffic. It has a tar-macadam surface and is about 20 ft. wide. There are several secondary polder roads but they are no good for heavy traffic.

b. Construction

Road everywhere good for 2-way traffic.

Den Oever-Middenmeer: 20 ft. wide, concrete surface. Completed by December, 1940.

Middenmeer-Oosthuizen: 20 ft. wide, brick and asphalt surface.

Oosthuizen-Amsterdam: 20 ft. wide, tar-macadam surface.

c. Condition

Den Oever-Hoorn: National Highway under construction. Completed to Middenmeer in December, 1940. Present road, class A-4 .

d. Bridges and Ferries

Level crossings at Hoorn (2), and Oosthuizen.

Several stone arch culverts over drainage canal capable of bearing all military loads.

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Ferry at Amsterdam.

Road #23. Roermond-Maastricht.
Class A-1. Distance 29¾ miles.

a. Description

Main route from Limburg to eastern France along Maas Valley. Suitable for all military traffic. Connects Limburg industrial area to the area leading to Liége.

b. Construction

20-25 ft. wide, asphalt surface.

c. Condition

Suitable to all military traffic, 1939.

d. Bridges and Ferries

Level crossings at Echt, Susteren, Sittard.

R.R. Bridges over road at Limbrecht. Many minor bridges and culverts reported suitable for all military traffic.

No ferries.

Road #24. Rotterdam-Gouda.
Class A-1. Distance 12 miles.

a. Description

National Highway connecting Rotterdam to the completed National Highway from The Hague to Utrecht at Gouda. From Gouda an alternative road to Utrecht along the river Ijssel but not a suitable road for military traffic. The secondary road system of Rotterdam-Gouda road is poorly developed.

b. Construction

A National Highway. Single roadway type of 20½ ft. wide.

Cycle paths, each side 6½ ft. wide.

c. Condition

Completed in 1940.

d. Bridges and Ferries

R. R. bridges over road at Rotterdam (2), near Gouda (2).

Road bridge over local road and canal at Nieuwerkerk.

No ferries.

Road #25. Tornouzen-Ghent.
Class A-4. Distance 24 3/4 miles.

a. Description

Main road inland to Ghent. Good for continuous military traffic of lighter type on an asphalt and paving stone surface. Deep ditches on west of road and the Ghent-Tornouzen canal on the east. Secondary roadway poorly developed; frequently only 1 way traffic on narrow paving stone roads.

b. Construction

Asphalt surface, 15-20 ft. wide.

c. Condition

Used continuously as a German supply road.

d. Bridges and Ferries

Level crossings at Evergem, Wondelghem, Ghent.

R.R. bridge over road at Selzaete.

Road bridge over R. R. at Sluiskil.

Stone culverts over minor streams, about 5-10 ft. long.

No ferries.

Road #26. Zierikzee-Etten, via Steenbergen
Class A-2. Distance 36½ miles.

a. Description

Main road from central Zeeland and area around Haamstede air-field to the main road from Bergen op Zoom to the east. Suitable in sections for all military traffic and all over for vehicles up to 25 tons. Crosses by ferry to mainland.

b. Construction

Zierikzee-Zijpe: width 20-25 ft., brick surface.

Zijpe-St. Phillipsland: 20½ ft. wide, concrete. Cycle path of concrete 8½ ft. wide.

St. Phillipsland-Steenbergen: 20 ft. wide, concrete and asphalt.

Steenbergen-Etten: 20 ft. wide, asphalt surface.

c. Condition

In use by Germans as main supply road to Haamstede airport. A National Highway under construction. Completed in section-Zijpe-

St. Phillipsland.

d. Bridges and Ferries

Level crossings at Oudenbosch and Etten.

Several minor bridges and culverts in stone or concrete single arch.

Will bear 25 tons.

Ferry at Zijpe.

BRIDGE CONSTRUCTION OF SOME BRIDGES MENTIONED IN THE APPENDIX ON ROADS

1. Alkmaar- Amsterdam

Alkmaar. Reported, a wooden drawbridge. Reported span of river (henceforth referred to merely as span), 20 ft. The roadway is 10-15 wide. Could be reinforced with local masonry. Not destroyed by end of 1940.

Alkmaar. ¼ of mile beyond the first named bridge there is an old stone fixed bridge about 20 ft. span and 70 ft. wide roadway. It could be reinforced with local masonry. Not damaged in 1940.

Limmen. Reported, a stone or iron fixed bridge, 10 ft. span. Reported, not damaged in 1940. Crosses the Schulpvaart.

Krommenie. Reported, an iron girder swing bridge, 23 ft. span and 20-25 ft. wide roadway. Crossed the Nauernasche Vaart. Not damaged in 1940.

2. Amsterdam-Breda-Antwerp

Amsterdam. Reported, iron platform between stone abutments. Capable of carrying all military loads. About 20-40 ft. span. Much local material available for reinforcing the bridge. There are several bridges of this type in Amsterdam.

Weesper Trek. Reported, steel swing bridge with stone and concrete abutments. It is central pivot type. It had a span of about 30 ft. and 40 ft. wide roadway.

Abcoude. An iron swing bridge with stone abutments, 15 ft. wide roadway. It could be reinforced with local masonry. It crosses the R. Gein, 4 ft. deep.

Loenersloot. A steel swing bridge of central pivot type, about 260 ft. span and 40 ft. wide roadway. It crosses the Merwede Canal (clearance 26 ft.).

Nieuwesluis. Reported steel drawbridge, about 15 ft. span, crossing a drainage canal 3 ft. deep.

Utrecht. Reported steel swing bridge of central pivot type, about

30 ft. span and 40 ft. wide roadway. Could be reinforced with local masonry. Crosses the Merwede Canal.

Near Ijsselstein. Reported reinforced concrete with single steel span. Capable of carrying all military loads. It crosses branches of the R. Ijssel. One span is 13 ft. long and the other is 20½ ft. long. Both are of normal width. One maybe a drawbridge.

Vianen. A central steel bridge with concrete supports and abutments. Capable of carrying all military loads. It has a 750 ft. span and a 30-40 ft. wide roadway. It has steep embankments on the approaches. It crosses the R. Lek and local roads.

Rietveld. Reported overhead steel swing bridge with reinforced concrete abutments. About 60 ft. span, 20 ft. wide. roadway. It crosses the Merwede Canal and a road.

Perceboom. Reported steel central span with stone or concrete side spans. About 840 ft. span. Crosses the Bergsche Maas. Destroyed in 1940. By March 1941 it was in an advanced stage of reconstruction.

Oosterhout. Steel swing span with reinforced concrete abutments. It carries a railroad. About 30 ft. span and 25-40 ft. wide roadway. Crosses the Wilhelmina Canal.

Breda. Brick arch, 26 ft. span, 25-30 ft. wide roadway. Could be reinforced with local masonry. Crosses the River Mark.

Merxem. Concrete viaduct with several spans. Central bridge in wood and iron. Capable of bearing all military loads. About 400 ft. span, 80 ft. wide roadway on viaduct and 30 ft. wide roadway on bridge. Local material available for reinforcement. Crosses the Albert Canal. Destroyed but rebuilt by 1941. A bridge 400 yds. west is also in use and is being widened.

Antwerp. Earthen embankment with brick arch. Carries all military loads. About 200 ft. span and 20-30 ft. wide roadway.

Crosses River Schyn. Partly destroyed during invasion. Local material available for reconstruction.

3. Amsterdam-Hasselt-Belgium

Amsterdam
Weesper Trek
Abcoude
Loenersloot
Nieuwesluis
Utrecht
Near Ijsselstein
Vianen

See the report of these bridges under 2.

Hagestein. Iron type swing span with a capacity of 3 tons per wheel. About 27 ft. roadway. Crosses the Merwede Canal.

Zaltbommel. Iron box girder construction on stone piers and having stone abutments. Carries all military loads. About 3,050 ft. span, 40 ft. wide roadway. Crosses River Waal. A span of both road and railway bridges was destroyed. Traffic now passes by ferry.

Hedel. Bridge destroyed and a temporary one of pontoons may have been completed. Crosses the Bergschemaas.

's-Hertogenbosch. Reinforced concrete bridge. About 20-30 ft. wide roadway. Crosses a railroad track.

's-Hertogenbosch. Steel and wooden drawbridge. 26 ft. span, 18 ft. wide roadway. Crosses the Canal de Engelen.

Near Best. Reported steel swing span with stone abutments. About 24 ft. span. Carries 2 way traffic. Crosses Wilhelmina Canal. Destroyed but reported replaced by a temporary bridge in 1941.

De Groote Barrier. Reported, steel swing span with stone abutments. It is a 25 ft. span and can carry 2 way traffic. Crosses the Junction Canal from Maas to the Schelde.

Hasselt. Iron bridge believed to be Vierendeel type span. 2 temporary bridges in wood. The span of these bridges is 245 ft., width of the bridges is 56 ft. Crosses Albert Canal. Destroyed 1939. Rebuilt in December, 1941.

It is of stone constuction.

Hasselt. Stone arch, 14 ft. span. Crosses River Demer.

Hasselt. Stone arch, 16 ft. span. Crosses the Old Demer.

4. Amsterdam-Amersfoort.

Amsterdam. Reported, iron platform between stone abutments. Can carry all military loads. About 20-40 ft. span. Local supply of reconstruction material available. Several bridges such as this in Amsterdam.

Amsterdam. Stone arch bridge with central lifting span. 29 ft. span. Crosses River Amstel.

Near Diemerbrug. Reported, swing span with 1 abutment. Span 24 ft. Crosses River Diemen (4 ft. water clearance).

Near Overdiemen. Fixed iron bridge, about 28 ft. span. Crosses Merwede Canal (28 ft. water clearance).

Weesp. Reported, iron drawbridge, 30 ft. span. Crosses river Vecht.

5. Rotterdam-Antwerp

Rotterdam. (Williamsbrug) Iron box girder type with stone piers. Carries all military loads. 885 ft. span, 30-40 ft. wide roadway, load clearance 30 ft. There are raised approaches along a broad and straight four-way macadam road. There is a rr. bridge of steel girder construction on stone piers immediately to the east.

Rotterdam. (Koningshaven) Steel and masonry double-leaf bascule bridge. Carries all military loads. 164 ft. span and roadway is at least 30 ft. wide. Railway bridge, vertical lift type with steel girder, immediately to the east. Crosses Koningshaven.

Near Barendrecht. Vertical lift bridge. Steel girder, central span and 2 side spans. Steel girder towers. 164 ft. span, about 20 ft. roadway. Crosses Oude Maas (15 ft. water-clearance when closed),

Near Dintcloord, Swing bridge. Steel frame with a wooden floor. About 200 ft. span, and a 30 ft. roadway. Crosses the river Dintel Mark.

Near Steenbergen. Drawbridge. Steel frame with wooden floor. 32 ft. span, 12 ft. roadway. Crosses Steenbergsche Vliet.

R. Dvorne. Concrete culvert. Carries all military loads. 20 ft. span, 20-25 ft. roadway.

South of Bergen op Zoom. Reported reinforced concrete. Carries all military loads. It crosses a double-tracked rail - road bridge. 20-25 ft. roadway.

Merxem. See road under 2.

Antwerp. See road under 2.

6. Antwerp-Willemstad

Antwerp. See road number 2.

Merxem. See road Number 2.

Stampersgat. Steel double swing spans. 72 ft. span, about 12-15 ft. roadway. Crosses the River Dintel Mark.

7. Eindhoven-Turnhout. No information.

8. Bergen op Zoom-Hollandschdiep

Oudgastel. Steel swing span. About 40 ft. span, 10-15 ft. wide roadway. Crosses the Roosendaalsche Vliet. Tramway follows the road.

Standdaarbuiten. Steel swing span, about 20 ft. span, 30 ft. roadway. Crosses the river Mark.

Zevenbergen. Steel frame drawbridge with a wooden floor. 21-3/4 ft. span, 15-20 ft. wide roadway. Crosses the Roode vaart.

9. Breskens-Hulst

Sas van Gent. 2 iron swing bridges, both 85 ft. span. Crosses the West and East arms of the Ghent-Terneuzen Canal.

10. Brielle-Rotterdam

Heenvliet. Reported iron swing bridge, 45 ft. span, width of

roadway 15 ft. Crosses Voornsche Canal.

Spijkenisse. Iron vertical lift with a central lifting span and 2 lateral spans. 340 ft. span of river, and 20-25 ft. wide roadway. Crosses Oude Maas. Lifting span rises to 145 ft. Not destroyed, 1941.

Rotterdam. See road number 5.

Appendix XXII

Harbors, Docks, Quays

and Port Facilities

Amsterdam

Locks at Ijmuiden:

North Lock.....	Length.....	1312.4 feet
	Width.....	164 feet
	Depth over sill....	49.21 feet
Middle Lock.....	Length.....	738 feet 2 inches
	Width.....	82 feet
	Depth over sill....	32 feet 8 inches
South Lock	length.....	390.4 feet
	width	59 feet
Depth over sill		24.6 feet
Small Lock, length.....		226.3 feet
Small Lock, width.....		32.8 feet
Depth over sill.....		15 feet

The Y, with the basins for the anchorage of seagoing vessels, contains 360 acres water area, with a depth from.... 32 feet

The Y Quayage at Jetties for seagoing vessels, 2,782 feet

One, 20 ton electric crane.

New West Harbor:

Area of Basin..... 25 acres

Length of Quayage (Ford Works)..... 690 feet

Depth..... 32 feet

Petroleum Basin:

Area of Basin..... 30 acres

Width at entrances	East.....	100 feet
	West.....	165 feet

Depth..... 32 feet

Quays..... nil.

No locks.

Jetties:

(Dordtsche Petroleum Maatschappij.) Depth of water alongside..... 32 feet

(Superphosphate factory on Canal.)

Lengths of Quayage..... 242 feet
328 feet

Depth of water alongside..... 27 feet 9 inches
19 feet 6 inches

J. P. Coenhaven:

Area of Basin..... 49 acres

Width of entrance..... 590 feet

Depth..... 32 feet 10 inches

Quayage length:

For seagoing vessels..... 11,500 feet

For Barges..... 6,600 feet

Timber Docks (Houthaven)

Area of Basins (Minerva-haven and Nieuwe Houthaven)..... 87 acres

Width of entrance..... 131 feet

Depth of water..... 26 feet

Timber ponds..... about 83½ acres

No Quayage. No locks.

Oude Houthaven:

Area of Basin..... 31 acres

Width of entrance..... 230 feet

Depth.....23 to 27 3/4 feet

Quays..... nil.

No Locks. Grain silo 394 feet by 85 feet. Large warehouses.

East Dock:

Area of Basin..... 30 acres

Depth of water over Lock sill..... 20 feet

Quays..... nil.

Commercial Quay (Handelskade) and Basin:

Quayage length.....5,248 feet
with depth of water..... 25 feet 3 inches
and 1,970 feet with depth of water..... 32 feet

The Handelskade is supplied with hydraulic and electric power, 1 hydraulic crane to lift 30 tons, 16 hydraulic cranes to lift 3 tons each, 3 to lift 6 tons each, and 3 to lift 1½ tons each, 16 electirc cranes to lift 3 to 6 tons each, sheds and warehouses.

Ykade: Divided as follows:

Javakade

Length..... 3,690 feet

Depth of water..... 32 "

Levantkade

Length..... 2,338 "

Depth of water..... 23 "

Sumatrakade

Length..... 4,433 "

Depth of water..... 32 "

Surinamekade

Length..... 2,492 "

Depth of water..... 32 "

Rijnkade

Length..... 492 "

Depth of water..... 11⅓ "

Sheds and electric cranes

Ore Quay (Ertskade):

Quayage. Length..... 1,017 "

With depth of water..... 27 " 10 inches

The Ore Quay is supplied with 6 electric cranes to lift 3 tons, with a quayage of 492 feet and 24 feet, 5 inches depth of water alongsid

Railway Basin (Spoorweghaven)

Width of entrance..... 270 feet

Partly Basin and Quayage..... 2,850 "

Depth..... 26⅓ "

No locks

1 electric coal-tip, lifting power 32 tons

3 electric transportable cranes, lifting power 7 tons each

1 electric transportable crane, lifting power 6 tons

2 electric cranes to lift 3 tons each

5 steam cranes, lifting power 6 tons each

Entrepothaven:

Area of Basin.....(about) 35 acres

Length..... 5,036 feet

Width..... 300 feet

Depth..... 28 feet

Sheds and hydraulic cranes.

Borneokade:

Length of Quayage on east and north sides 2,756 feet with a depth of 32 feet, and a length of 623 feet with a depth of 10 feet.

Large warehouses. Electric cranes.

Zeeburgerkade: (Eastward of Entrepothaven.)

Length..... 1,148 feet

Depth..... 32 feet

Sheds and electric cranes.

Delfzyl

River Ems:

Vessels can anchor in the river at a distance of about 1,500 feet from the shore in 30 to 36 feet of water at ordinary low tide. The least depth in the river Ems, or entrance to the roads from the sea is 20 feet at low water.

Buitenhaven (Outer Harbor):

Water area..... 44 acres

Length of the Tidal Harbor from the lock to the end of pier-head in the roads outside..... 2,500 feet

Available width of the harbor entrance (between pierheads) from the roads... 164 feet

Width of deep water in the middle of harbor..... 1,000 feet

Depth of entrance at ordinary springs { high water..... 30 feet; low water..... 21 feet

Depth of entrance at ordinary neaps { high water..... 28 feet

Length of berth for swinging round..... 500 feet

Greatest width of deep water..... 550 feet

Length of Quayage..... 2,365 feet

Depth at Quayside at ordinary springs { high water..... 32 feet; low water..... 24 feet

Depth in middle of harbor at spring tide, and at coal lift at ordinary high water spring tides about..... 32 or 33 feet

Average rise and fall of tides..... 8 or 9 feet

Average rise and fall at spring tides - 10 or 11 feet.

Railway and tramway facilities. 2 steam cranes (4 tons), 5 portable electric luffing cranes (5 tons), 1 transporting bridge (4 tons) all provided with grabs. 4 portable electric luffing cranes (2 tons), 1 motor locomotive, salvage motorboat, capacity of pumps about 80 tons per hour. Vessels discharge and load at the quays, or by means of lighters.

Binnenhaven (Inner Harbor): (This is situated inside the lock of the canal to Groningen.) Government.

Length	1,200 feet
Width	270 "
Length of Lock	200 "
Width of Lock	34.5 "
Depth of water over sill	17.5 "
Depth of channel from lock to inner harbor	13 " , 9 inches
Depth in inner harbor	13 "
Length of Quayage	1,000 "

There is a basin with a mean depth of 16 to 17 feet at low water.

Canal:

This canal runs from Groningen to Delfzyl, and is 16 miles in length. It is available for vessels 180 feet long, drawing 12 feet, 5 inches and of 33 feet beam. Quayage extends along this canal for about 1,000 yards from Delfzyl.

Dordrecht: Harbors and Buoys in the Tidal River.

Kalkhaven:

Length	885.87 feet
Breadth	262.48 "
Depth at high water	20 "
Depth at low water	15 "
Clear width of bridge at harbor entrance	55.77 feet

Spoorweghaven:

Length	984.30 feet

1070

Breadth..... 229.67 feet

Depth at high water..... 16.40 "

Depth at low water..... 11.48 "

Railway communication.....

Wolwevershaven and Nieuwehaven:

Can accomodate small sea-going vessels of shallow draught, up to 250 tons, but are principally used for river craft; the depth varies from 13.88 to 17.20 feet at H.W. and 8.36 to 11.68 feet at L.W.

Buoys in the "Biesbosch":

Four mooring buoys spaced at 328 feet apart.

Depth at high water..... 16.40 feet

Depth at low water..... 11.48 "

Handelskade:

Length..... 840.25 "

Available yard area.....1,112 acres

Depth at high water..... 19.68 feet

Depth at low water..... 14.76 "

Railway accommodation.....

Zeehaven (Below Railway Bridge):

Width of entrance..... 377 "

Length of Basin.....1,725 "

Breadth of Basin.....1,050 "

Area..... 24.7 acres

Depth at H.W.O.S.T..... 31.6 feet

Depth at L.W.O.S.T..... 26.6 "

Available yard area..... 23.5 acres

Railway communication.

All harbors and quays are in open communication with the tidal river "Oude Maas." Dordtsche Kil.

Merwedehaven (above Railway Bridge):

Width of entrance..... 165 feet

Length of Basin.....2,053 "

Breadth of Basin..... 490 "

Area..... 25 acres

Depth at H.W.O.S.T..... 16.83 feet

Depth at L.W.O.S.T..... 11.22 feet

Available yard area..... 25 acres

Railway communication. Harbor is open communication with river Merwede.

Port facilities - 4 loading bridges with a length of 374 feet and a lifting capacity of 5 tons, 2 cranes with a lifting capacity of 5 tons, 2 floating cranes with a lifting capacity of 8-10 tons.

A stock of about 5,000 tons of coal is usually kept on hand. Ships are bunkered by means of floating cranes and grabs. No oil fuel.

Flushing - the Flushing Docks are under the management of the N. V. Haven van Vlissingen.

Inner Docks:

Length of Dock..... 1,650 feet

Width..... 650 feet

Length of Quayage..... 7,000 feet

Length of Large Lock..... 486 feet

Width of entrance..... 66.8 feet

Depth of water over sill at ordinary spring tides..... 27 feet

Depth of water over sill at ordinary neap tides..... 25 feet

Length of 2nd small lock..... 213.4 feet

Width of entrance..... 26.8 feet

Depth of water over sill at ordinary spring tides..... 27 feet

Depth of water over sill at ordinary neap tides..... 25 feet

Cranes to lift 50 and 6 tons respectively.

Outer Harbor:

Length of new quayage..... 2,500 feet

Depth of water { at high water..... 47 feet
at low water..... 35 feet

Warehouse accommodation and tank installation for molasses.

Cranes to lift from 6 to 10 tons.

Harlingen

One floating derrick, lifting capacity 25 tons.

Outer Harbor:

Length..... 726 feet
Width..... 108 feet
Width of entrance..... 210 feet
Length of Quayage..... 350 feet
Depth of water at entrance..... 16 feet

The depth of water on the bar, which is a mile from harbor, is now 18 feet at average high water.

Nieuwe Willemshaven:

Length..... 2,440 feet
Width..... 400 feet
Width of entrance..... 183 feet

Length of Quavage with 23 feet of water at high tide, 1,100 feet, and with 15 feet at high tide, 500 feet.

Willemshaven or Dock:

Length..... 510 feet
Width..... 400 to 460 feet
Length of Quayage..... 1,100 feet
Width of entrance..... 175 feet
Depth of water..... 19 feet

The quays are connected with the railways and tramlines at East and West Quays.

Zuiderhaven:

Length..... 1,583 feet
Width..... 114 to 210 feet
Width of Lock..... 33 feet
Length of Quayage..... 3,000 feet
Depth of water..... 14 feet

Noorderhaven:

Length..... 1,113 feet
Width.....130 to 142 feet
Width of Lock..... 31 feet

Length of Quayage..... 2,000 feet

Depth of water..... 11 feet

The depths given are those at high water; 5½ feet should be deducted to find depth at average low water. Bottom is muddy.

Helder (den).

Outer Harbor:

Length..... 7,218 feet

Width.....315 to 476 feet

Depth at entrance..... 39 feet

Depth at quayside..... 23 feet

2 dry docks, 370 ft. long by 55 ft. wide, d. 19½ ft. and 270 ft. long and 49 ft. wide, d. 15 ft. respectively. Small floating dock, 132 ft. by 26 ft. by 10 ft. respectively. Floating cranes 10 to 25 tons

Purmerend

Canal:

Length of Quayage..... 567 feet

Depth of water at high water (winter).. 8.5 feet

Depth of water at high water (summer).. 6.6 feet

Depth of part kept for sea-going vessels 18.7 feet

Rotterdam. Harbors for Ocean-going vessels on the right bank.

Parkhaven:

Length..... 1,470 feet

Width..... 393 feet

Length of quayage..... 2,940 feet

Depth of water..... 21 feet

Parkhaven is connected by locks, called Parklocks, with inland canals.

St. Jobshaven:

Length..... 1,140 feet

Width..... 327 feet

Length of quayage..... 2,640 feet

Depth of water..... 21 to 28 feet

Schichaven:

Mean length..... 1,800 feet
Width..... 393 feet
Length of quayage..... 3,720 feet
Depth of water..... 20 to 26 feet

Koushaven:

Length..... 720 feet
Width..... 114 feet
Depth of water..... 13 feet
No Quayage.

Yselhaven:

Length..... 1,650 feet
Width..... 393 feet
Length of quayage..... 3,690 feet
Depth of water.....29 to 33 feet

Lekhaven:

Length..... 2,460 feet
Width..... 393 feet
Length of quayage..... 5,310 feet
Depth of water.....29 to 33 feet

Keilehaven:

Length..... 2,640 feet
Width..... 230 feet
Length of quayage..... 260 feet
Depth of water..... 13 feet

Benzinehaven:

Length..... 900 feet
Width..... 130 feet
Depth of water..... 13 feet
No Quayage.

Merwehaven:

Area..... 90 acres
Length of quayage.....14,000 feet
Depth of water.....33 to 40 feet

Rotterdam. Harbors for inland craft on the right bank.

Buizengat:

Quay berthage..... 2,560 feet

Low water depth..... 10 feet

Boerengat:

Quay berthage..... 2,300 feet

Low water depth..... 11.5 feet

Harengsoliet:

Quay berthage..... 2,300 feet

Low water depth..... 11 feet

Nieuwehaven:

Quay berthage..... 3,200 feet

Low water depth..... 10 feet

Oudehaven:

Quay berthage ..... 1,180 feet

Low water depth..... 10 feet

Kalkhaven:

Quay berthage..... 650 feet

Low water depth..... 8 feet

Scheepmakershaven:

Quay berthage..... 2,660 feet

Low water depth..... 10 feet

Wijnhaven:

Quay berthage..... 3,200 feet

Low water depth..... 10 feet

Blaak:

Quay berthage..... 860 feet

Low water depth..... 10 feet

Lenvehaven:

Quay berthage..... 4,850 feet

Low water depth..... 11.5 feet

Zalmhaven:

Quay berthage..... 1,070 feet

Low water depth..... 9 feet

Veerhaven:

Quay berthage..... 1,080 feet

Low water depth..... 11.5 feet

Middenkous:

Quay berthage..... 1,300 feet

Low water depth..... .13 feet

Old Delfshaven:

At Old Delfshaven, also on the right bank of the Maas, are three harbors - viz., the Voorhaven, Achterhaven, and Buizenwaal, separated from the river by a lock called the Ruigeplaatsluis. The depth on sill at low water is about 15 feet, and the width of entrance 49¼ feet. These harbors are used for small seagoing vessels of about 250 tons and river craft. Large steamers (say, 2,500 tons) can, however when unloaded, pass the lock and make use of an inner basin (Middenkous) from which the three harbors above referred to open, for the purpose of repairs. The lock (Ruigeplaatsluis) is, however, only 196 feet long; large vessels can, therefore, only pass when the water in the Middenkous and the river are level, so that the lock gates at each end can be opened at the same time.

Coolhaven:

Quay berthage..... 4,000 feet

Low water depth..... 11 feet

Koushaven:

Quay berthage..... 1,300 feet

Low water depth..... 13 feet

Koolehaven:

Quay berthage..... ----

Low water depth..... 13 feet

Benzinehaven:

Quay berthage..... 850 feet

Low water depth..... 10

Rotterdam. Quays on the right bank of the river.

Mass Railway Station:

Length..... 1,641 feet

Depth of water..... 19.7 feet

Oosterkade:

Length..... 1,179 feet

Depth of water..... 11.5 feet

Boompjeskade:

Length..... 3,090 feet

Depth of water..... 13 feet

Willemskade:

Length..... 1,710 feet

Depth of water..... 13 feet

Westerkade:

Length..... 1,000 feet

Depth of water..... 16 feet

Parkkade:

Length..... 1,730 feet

Depth of water..... 19 feet

St. Jobskade:

Length..... 540 feet

Depth of water..... 28 feet

Lloydkade:

Length..... 1,740 feet

Depth of water..... 28 feet

Pelgrimskade:

Length..... 400 feet

Depth of water..... 19 feet

Yselkade:

Length..... 345 feet

Depth of water.....29 to 33 feet

Lekkade:

Length..... 430 feet

Depth of water.....29 to 33 feet

Rotterdam. Quays in the river.

Maaskade O.Z. (East side) along Noorder Eiland (Northern Island).

Length..... 1,884 feet

1370 Depth of water..... 9.8 feet

Maaskade W. Z. (West side):

Length..... 2,688 feet

Depth of water..... 9.8 to 19.6 feet

Prins Hendrikkade O.Z. (East Side). Along the Koningshaven:

Length..... 1,641 feet

Depth of water..... 12 feet

Prins Hendrikkade W.Z. (West side).

Length..... 2,670 feet

Depth of water..... 12 feet

Mooring Buoys:

In the open river there are mooring buoys affording accommodation for 8 large sea-going vessels, loaded, and ample space for lighters, barges, etc.

Rotterdam. Harbors on the left bank of the river.

Nassauhaven:

Length..... 1,960 feet

Width..... 165 to 264 feet

Depth of water.....11 to 13 feet

No Quayage.

Persoonshaven:

Length..... 1,860 feet

Width..... 195 feet

Depth of water..... 11 feet

No Quayage.

Binnenhaven:

Length..... 3,280 feet

Width..... 264 feet

Length of quayage..... 6,170 feet

Depth of water..... 21 to 23 feet

Entrepothaven:

Length..... 660 feet

Width..... 195 feet

Length of quayage..... 1,440 feet

Depth of water..... 23 feet

Spoorweghaven (Railway dock):

Length..... 3,600 feet

Width..... 378 feet

Length of quayage..... 9,000 feet

Depth of water..... 23 feet

Rijnhaven:

Extreme length..... 3,117 feet

Extreme width..... 1,476 feet

Width of entrance..... 459 feet

Water area..... 74 acres

Depth of water..... 28 feet

Space for 12 large seagoing vessels which are moored at dolphins and ample accommodation for lighters.

The quayage is continuous around three sides of the harbor, open to the tidal river on one side.

Katendrechtschehaven No. 1.

Length..... 600 feet

Width..... 345 feet

Length of quayage..... 1,600 feet

Depth of water.....21 to 28 feet

Katendrechtschehaven No. 2.

Length..... 810 feet

Width..... 426 feet

Length of quayage..... 2,060 feet

Depth of water..... 23 feet

1 electric travelling crane to lift $7\frac{1}{2}$ tons.

Maashaven:

Area..... 148 acres

Width at entrance..... 459 feet

Width of basin..... 1,050 feet

Depth of water.....28 to 33 feet

Accommodation is provided for 16 large loaded seagoing vessels, which are moored at Dolphins.

There is ample space for lighters, barges, etc.

About 6,200 feet of the quay is provided with quay walls, the remainder having a stone slope.

A steel floating dock (No. 4), lifting capacity 15,000 tons, is in this harbor..

4 electric travelling cranes to lift up to 10 tons; 5 electric travelling cranes to lift up to 8 tons, and 1 electric travelling crane to lift up to 5 tons.

Dokhaven:

This harbor gives access to three floating docks, and is not intended to berth seagoing vessels.

St. Janshaven:

Length.....	420 feet
Width.....	195 feet
Depth of water.....	26 feet

Petroleumhaven:

Length.....	540 feet
Width.....	198 feet
Depth of water.....	26 feet

Kortenoordschehaven:

Length.....	1,110 feet
Width.....	228 feet
Depth of water.....	23 to 26 feet

Waalhaven:

Area.....	730 acres
With depth of water 33 ft.....	270 acres
With depth of water 26 to 33 ft.....	330 acres
With depth of water 13 to 20 ft.....	130 acres
Width at entrance.....	920 feet

This harbor provides accommodation for 82 seagoing vessels, which are moored at dolphins and mooring buoys, drawing 28 to 33 feet at ordinary low water, with lighters, etc.

Length of quayage about 8,900 feet.

6 electric travelling cranes to lift up to 12½ tons.

8 electric travelling cranes to lift 15 tons.

2 electric travelling cranes to lift 20 tons.

South of the Waalhaven the Municipality has built an aerodrome with good facilities for air traffic. Regular daily services to London, Paris, Brussels, Strasburg, Basle, Milan, Dusseldorf, Duisburg, Prague, Vienna, Berlin, Hamburg, Copenhagen, Stockholm, and Amsterdam.

Petroleumhaven Vondelingenplaat:

A new basin for the storage of petroleum.

Area..... 125 acres

Depth..... 33 feet

Wharves are leased to the Bataafsche Petroleum Maats., American Petroleum Co., the Association of Warehousemen (Pakhuismeesteren) and Petr. Association.

A second Petroleumhaven is in course of construction. (Dec. 1938)

Rotterdam. Quays on the left bank of the river.

Feyenoordkade:

Length..... 990 feet

Depth of water..... 12 feet

Nassaukade:

Length..... 2,010 feet

Depth of water..... 15 feet

Stieltjeskade:

Length..... 1,050 feet

Depth of water..... 15 feet

Wilhelminakade:

Length..... 2,790 feet

Depth of water..... 33 feet

Katendrechtschekade:

Length..... 1,180 feet

Depth of water alongside..... 23 feet

St. Janskade:

Length..... 2,790 feet

Depth of water.....20 to 23 feet

Kortenoordschekade:

Length..... 2,790 feet

Depth of water..... 24 feet

Types of Mechanical Equipment	Sea Navigation: Fixed on the quay — Right (old) Bank No. Capacity	Sea Navigation: Fixed on the quay — Left (new) Bank No. Capacity	Sea Navigation: Floating No. Capacity	Home Navigation: Fixed on quay No. Capacity	Home Navigation: Floating No. Capacity	Total
Level luffing cranes	81. 78 of 3-5 tons 3 of 5-10 tons	26. 1 of 1-3 tons 24 of 3-5 tons 1 of 5-10 tons	38. 18 of 1-3 tons 1 of 3-5 tons 18 of 5-10 tons 1 of 10-20 tons	6. 4 of ½ to 3 tons 1 of 3-5 tons 1 of 5-10 tons		151
Other cranes	55. 30 of 1-3 tons 15 of 3-5 tons 7 of 5-10 tons 3 of 10-20 tons	83. 61 of 1-3 tons 19 of 3-5 tons 2 of 5-10 tons 1 of 20 tons	45. 3 of 1-3 tons 12 of 3-5 tons 29 of 5-10 tons 1 of 10-20 tons	51. 35 of ½ to 3 tons 12 of 3-5 tons 3 of 5-10 tons 1 of 20 tons	2 2 of 3-5 tons	236
Bridge cranes		29. 2 of 1-3 tons 11 of 5-10 tons 16 of 10-20 tons		6. 1 of ½ to 3 tons 5 of 3-5 tons		35
Coal tips		3. 1 of 32 tons 2 of 35 tons				3
Grain elevators	3. 3 of 80 tons	4. 1 of 80 tons per hr. 3 of 200 tons " "	25. of 250 tons per hr.	5. 1 of 10 tons per hr. 2 of 50 tons " " 1 of 60 tons " " 1 of 100 tons " "	2 1 of 60 tons per hr. 1 of 80 tons per hr.	39
Steamlighters			6. 1 of 1-3 tons 4 of 305 tons 1 of 5-10 tons			6
Bunkering appliances			6. 5 of 150-260 tons per hour 1 of 400 tons per hour			6
Sheer legs			25. 18 of 4-50 tons 2 of 55-60 tons 1 of 75 tons 4 of 100-200 tons			25

Terneuzen

Tidal Harbor:

Length of Canal from Terneuzen to Ghent, about 19 miles.

Two outer harbors (East and West).

West Harbor with one lock (West Lock) more especially for seagoing vessels.

East Harbor with two locks (Middle and East Locks) for inland craft.

Width of Canal at water level..... 219 feet.

Width of Canal at bottom..... 78 feet.

Vessels not exceeding the following dimensions are allowed to pass through the West Lock and the Canal:

Length..... 459 .

Breadth..... 55 ft. 8 in.

Draught..... 26 ft. 3 in.

With special permission, vessels exceeding, by a little, the above dimensions can be admitted into the West Lock. The largest vessel that can use the Middle and East Locks, respectively, may be as follows:

For middle Lock -

Length..... 295 feet

Breadth..... 36 feet

Draught..... 19 feet

For East Lock -

Length..... 230 feet

Breadth..... 24 ft. 7 in.

Draught..... 17½ feet

1 hand crane to lift 20 tons; 10 moveable cranes to lift 4 to 5 tons.

Sluiskil:

A sub-port of the port of Terneuzen on the canal. Seagoing vessels not exceeding a draught of 26 ft. 3 in. can enter the harbor.

Length of harbor..... 918 feet

Breadth..... 117½ feet

2 electric elevators on quay for loading sacks and cargo in bulk.

2 electric cranes on each elevator of 4 and 7 tons respectively

Ijmuiden:

Visschershaven: (Netherlands Government)

Length	3,410 feet
Width of entrance at bottom	100 feet
Width at bottom	340 to 475 feet
Length of quayage	4,430 feet
Depth at entrance at high water, ordinary	24 feet
Depth at entrance at low water, ordinary	19 feet

Ferro-concrete quay for loading and discharging purposes, 2,745 feet in length.

There is a quay wall for fishing coasters at the N.E. side of the harbor about 360 feet in length.

Railway communication, and auction halls.

1 electric crane to lift 20 tons.

Haringhaven: (Netherlands Government.)

Length	1,295 feet
Width of entrance at bottom	153 feet
Width at bottom	153 to 312 feet
Depth at entrance at high water, ordinary	20 feet
Depth at entrance at low water, ordinary	15 feet

Zaandam.

Length of quayage	3,609 feet
Length of anchorage	3,900 feet
Area of timber pond	16 acres
Depth of water (in harbor)	27½ to 29½ feet

Vessels can reach Zaandam with a draught of 28 feet. The port is situated on the Zaandam Canal, which is a branch of the North

Sea Canal. (See particulars under Amsterdam.) There are no bridges or locks on the Zaandam Canal.

The new Harbor is placed on the North Sea Canal border.

Length..... 2,395 feet

Width..... 285 feet

Depth of water..... 33.8 feet

Surrounding wood ponds of a total area of 15 acres. No bridges or locks.

APPENDIX XXIII

Bunkering Facilities in the Ports of the Netherlands

a. Bunkering Facilities at Rotterdam

(1) Coal Bunkering Facilities (1933-latest available)

There are large bunker stations at Rotterdam, Vlaardingen, Poortershaven, and the Hook of Holland equipped with modern machinery and appliances. Loading coal and coke from truck to ship is done by means of hydraulic tips and from barges and bridge cranes or movable revolving cranes. The principal coal bunkering stations in 1933 were:

(a) Coal Trading Association.

Floating plant: Equipment - 3 pontoon transporters, 2 self-propelling transporters, 29 floating grabs, 6 loading bridges and 2 floating elevators. The amount of coal usually kept on hand was 55,100 tons.

(b) Shipping and Coal Company

(1) Shore plant at Merwe Haven. Berthing capacity, 11,020 tons. Berthing capacity 500 ft. Depth of water alongside 30 ft. Storage capacity 11,020 tons. Type of mechanical equipment - electric shore cranes.

(2) Floating plant: equipment-4 floating cranes, and 2 bunkering machines. Amounts usually kept on hand, 33,000 tons.

(c) Handels en Transport Mij.

(1) Shore Plant at Vlaardingen

Berthing capacity --- 3 berths at quay. Depth of water alongside --- 31 feet. Storage capacity---22,040 tons. Type of mechanical equipment--3 electric shore transporters.

(2) Floating Plant

Equipment--2 self-propelling bunker elevators, 7 floating cranes with grabs. Amount usually kept on hand 33,000 tons.

(d) United Coal Company

(1) Shore plant at Poortershaven near Maassluis. Berthing capacity, 600 feet. Depth of water alongside, 26 feet.

Storage capacity, 16,500 tons. Type of machinery, electric transporting bridges.

(2) Floating plant: equipment-1 elevator, 1 floating crane, 4 floating grabs. Amounts usually kept on hand, 16,800 tons.

(2) Oil Bunkering Stations (1939)

(No statistics for capacity and amounts on hand available.)

(a) Anglo Iranian Oil Co.

Berths: 3 at New Petroleum Harbor with total of 437 ft. of berthing space, depth of water 33 ft.

Oils available: Furnace and Diesel.

Method and rate of delivery: 150 tons per hour alongside wharves, 75-125 tons per hour from barge.

(b) Bataafsche Petroleum Mij.

Berths: Nos. 1 and 2 at Vlaardingen, New Waterway. The berthing space is determined by 25 ft. draught.

Berths: Nos. 1-6, draught of 32 ft.

Method of delivery: from wharf or from lighter.

Oils available: fuel, diesel and gas.

(c) Am. Pet. Co. South bank of Nieuwe Maas, opposite Vlaardingen.

Berths: Vessels any length.

Depth of water: 31 ft.

Method of delivery: from terminal, from lighter.

Oils available: Fuel, diesel, gas.

(3) Storage Facilities

Up to May, 1940 there were 5,382,000 square feet of available space in warehouses, bonded stores and closed sheds. There were 5 silos, one of which was for 70,528 tons and other others of 35,264 tons, and upwards of 400 tanks of a capacity of 980,957 cubic yards for storage of mineral and vegetable oils.

b. Bunkering Facilities at and near Amsterdam

(1) Coal Bunkering Facilities (June, 1939)

(a) Ijmuiden: Steenkolen en Scheepvaart Maatschappij.

(1) Shore Plant:

Berthing capacity: 900 feet.

Depth of water: 30 "

Storage capacity: 16,530 tons.

Bunkering method: type of machine, electric grabs.

Maximum tons per hour: 110 tons.

(2) Floating Plant: Number: 2.

Bunkering speed: 85-110 tons per hour per grab. Mechanical equipment: floating grabs.

Barges: 30; 16,300 tons capacity.

Method of bunkering from barges: floating grabs.

Bunkering speed per hour: 110 tons.

Amount normally on hand: 11,020 tons.

(b) Amsterdam

-- Netherlands Coal Trading Company

(1) Shore Plant: at Coenhaven.

Berthing capacity: 1,000 feet.

Depth of water: 40 "

Storage capacity: 55,100 tons.

Bunkering methods: Bunkering by electrically driven shore cranes with grabs.

Maximum tons per hour: each crane, 440 tons.

(2) Floating Plant:

Floating cranes used at the following ports: Ijmuiden, Velzen, Zaandam, Amsterdam, Dordrecht and Rotterdam.

Barges: 8. 4,408 tons total capacity of fleet.

Bunkering from barges: cranes with grabs.

Speed: 385.7 tons per hour. Amount normally on hand: 33,060 tons.

(c) Zaandam

Schoepvaart and Steenkolen Maatschappij.

(1) No shore plant.

(2) Floating Plant

Number: 2.

Carrying Capacity: ?

Bunkering speed: 85-110 tons per hour, per grab.

Mechanical equipment: floating grabs.

Barges: 30, capacity 16,530 tons.

Method of bunkering from barges: by floating grabs.

Bunkering speed per hour: 100 tons. Amount on hand normally: 10,020 tons.

(d) Amsterdam

Schoepvaart and Steenkolen Maatschappij

(1) Shore Plant

Berthing capacity: 900 feet.

Depth of water: 25/30 feet.

Storage Capacity: 16,530 tons.

Bunkering Method: 2 floating grabs and an electric grab on the quay.

Maximum tons per hour: 110 tons per grab.

(2) Floating Plant

Number: 2.

Carrying capacity: ?

Bunkering speed: 85-110 tons per hour, per grab

Mechanical equipment: floating grabs.

Barges: 30.

Capacity: 16,530 tons.

Method of bunkering from barges: by floating grabs.

Bunkering speed: 110 tons,

Amount normally kept on hand: 11,020 tons.

(e) Amsterdam

W.H. Berghuys

(1) No shore plant

(2) Floating Plant:

Number: 6.

Carrying capacity: ?

Bunkering speed: 55-65 tons per hour, per crane.

Mechanical equipment: floating electric cranes.

Barges: 20. Capacity: 11,020 tons.

Method of bunkering from barges: floating electric cranes.

Speed of bunkering: 55-65 tons per hour, per crane.

Amount usually on hand: 5,510 to 11,020 tons.

(f) Amsterdam

Steenkolen Handelsvereeniging,

Storage Capacity: 110,200 tons.

Bunkering method: Modern floating cranes and elevators bunker the steamers if wanted at any place in the harbors of Amsterdam or Zaandam by day or night.

Barges and lighters: 60. Capacity: 22,040 tons.

Amount normally on hand: 44,080 to 55,100 tons.

(2) Oil Bunkering Stations (June, 1939)

(a) N.V. Veerenigde Petroleum Maatschappijen "Purfina-Sinclair"

(1) Shore Plant

Location: Petroleum Harbor, Amsterdam.

Berthing Capacity: 82 feet.

Depth water: 32 feet.

Pipe lines: 1.

Kinds of oil: diesel and fuel oils.

Bunkering speed: 25,000 barrels

Storage tanks
- Number: 3
- Type: overground
- Kinds of oil: diesel and fuel
- Maximum capacity: 25,000 barrels

(2) Floating Plant

Number: 1, 30 ton barge

Amount normally on hand: diesel 10,000 barrels; light fuel 5,000 barrels

(b) N.V. De Bataafsche Petroleum Maatschappij.

(1) Shore Plant

Location: North Amsterdam (Overzyde van het Y).

Berthing Capacity: 700 ft.

Depth of water: 30/33 ft.

Pipe Lines	No.: 4	1	1	1	1
	Kinds of Oil:	C Grade	Petr.	Diesel	Gasoil
	Bunkering speed:	350 tons an hr	275	350	250

Storage Tanks: No.: 12 with a maximum capacity of:

2	C Grade fuel,	max. cap.	66,000 bbls.
2	Petr., "	" "	17,200 "
3	Diesel fuel	" "	37,000 "
5	Gasoil	" "	117,000 "

(2) Floating Plant:

Number: 1.

Capacity barrels: 1,300.

Bunkering Speed: 600 bbls. per hr.

Amount usually on hand: C Grade fuel 6,000 tons

Petr. fuel 1,000 "

Diesel fuel 3,000 "

Gasoil 10,000 "

(c) American Petroleum Co.

(1) Shore Plant: Petroleum Harbor.

Berthing Capacity: 7,600 ft.

Depth of water: 30 ft.

Pipe Lines: No.: 4; Kinds of oil: Diesel Oil, Gas, Fuel Oil; Maximum Bunkering speed: 900 bbls. hour.

Storage tanks: No.: 7. type: iron tanks. 1 for fuel oil, 6 for diesel and gasoil. Maximum Capacity: 1 of 12,500, 3 of 16,500.

(2) Floating Plant

2 barges of 3,600 bbls. each, bunkering speed 500 bbls. per hour; 9 motor tank lighters of 300-1,900 bbls. with bunkering speed of 500 bbls. per hour.

Amount usually kept on hand: Diesel oil: 10,000 bbls.

Gasoil: 26,000 bbls.

Fuel oil: 12,500 bbls.

c. Bunkering Facilities at Flushing

(1) Coal Bunkering Facilities (1933, latest available).

Coal Trading Association.

Normal Supply: 6,000 tons.

Berthage: 600 feet.

Depth of water: 40 ft. high water, 27 ft. low water.

Method of delivery: From 1,000-ton floating elevator transporter with 6 bunkering tubes (200 tons per hour); from barges by floating cranes (60 tons per crane or up to 200 tanks per hour).

(2) Oil Bunkering Facilities (1939, no estimates of Capacity or Normal Supply on Hand)

Coal Trading Association

Berth: At several docks in Flushing, with ample berthing space.

Storage: Ample supplies of fuel oil, diesel, gasoil.

Method and rate of delivery: From pipe line, from wharves Pumping facilities to load oil as fast as vessel can receive it.

APPENDIX XXIV

IMPORTANT INLAND WATERWAYS OF THE NETHERLANDS.

1. River Mark and Mark Canal.
2. River Donge and Wilhelmina Canal.
3. Juliana Canal.
4. Wessem - Nederweert Canal.
5. Zuid Willems Vaart and Canalized Dieze.
6. River Maas.
7. River Waal.
8. Dordtsche Kil and Oude Maas.
9. Maas - Waal Canal.
10. New Waterway and Scheur.
11. River Lek and Neder Rijn.
12. River Schie and River Vliet.
13. Rivers Hollandsch Ijssel, Gouwe, Aar, Drecht, Amstel.
14. Merwede Canal.
15. Amsterdam - Rhine Canal.
16. The Oude Rijn.
17. Leiden - Ringvaart.
18. Ringvaart.
19. Ringvaart - Amsterdam.
20. River Spaarne.
21. Noord Zee Canal.
22. Noord Hollandsch Canal.
23. Zuid Beveland Canal.
24. Walcheren Canal.
25. Twenthe Canal.
26. Ijssel River - Appeldoornsche Canal.

1. River Mark and Mark Canal.

Length 29 3/4 miles.

a Description

(1) Connects the Volkerak with Breda. A shallow waterway.

(2) At 2 ½ miles from Breda it has a branch to Dinteloord, 8½ ft. deep, and at 8½ miles from Breda to Oudenbosch, 7½ ft. deep.

(3) At Lamgatsveer: a branch canal (Zevenbergsche Canal) 5½ miles long connecting the Mark with Hollandschdiep near Moerdijk.

(4) Near Breda, the Mark Canal (3 3/4 miles long) forms a link with the Wilhelmina Canal at Oosterhout.

b Bridges and locks

(1) River Mark: 11 drawbridges, of which 3 are railroad bridges, none fixed, width 32 ft.

(2) Mark Canal: 3 drawbridges and 2 fixed; minimum width 24½ ft., water clearance 21 ¼ ft.

(3) River Mark: 1 lock, ½ mile from mouth, length 87 ft., width 23 ft., depth 7¼ ft.

(4) Mark Canal: 1 lock, near Wilhelmina Canal, length 213 ft., width 24½ ft., depth 10 ft.

c Navigation

To boats of: length 85 ft., width 25½ ft., draught 7 ft.

Mark Canal: to boats of 500 tons.

d Source of Water

Wilhelmina Canal and Mark River.

e Port and Quay facilities

Vluchthaven - Open to boats of 3,000 tons and 14-1/2 ft. draught.
Oudenbosch - Port: Length 1-1/4 miles, width 32 ft.
Standdaarbuiten - Open to boats 80 tons, length 82 ft., width 11-1/2 ft., draught 5 ft.
Terheijden - Length 260 ft.
Belerumpolder - 1,475 ft. x 145 x 9-1/2 ft.
Spoorweghaven - Depth 8-3/4 ft.
Breda - Open only to 20-ton barges.

There are from 50-60 private quays.

2. River Dongc and Wilhelmina Canal.

Goortruidenberg-Zuid Willems Vaart. Length 45 miles.

a Description

(1) Links the Zuid Willems Vaart with the Bergsche Maas and the Hollandsch diep by way of the river Dongc and Goortruidenberg.

(2) It passes north of Tilburg being connected with Tilburg and Eindhoven by a branch canal.

(3) It is connected with river Mark and Breda by the Mark Canal.

b Size

(1) River Dongc: width 130-160 ft., depth 10 ft.

(2) Wilhelmina Canal: width 82 ft., above Oosterhout and 98½ ft. below Oosterhout; width at bottom 50 ft., depth 7½ ft.

c Bridges and locks

(1) River Dongc: 1 movable railroad bridge at Goortruidenberg; 2 movable road bridges-at Goortruidenberg and Oosterhout.

(2) Wilhelmina Canal: 16 drawbridges, width 28 ft.; 12 fixed bridges, width 31 ft.; 7 swing, width 28 ft. Minimum clearance, 17 ft. 8 in.

(3) Wilhelmina Canal: 5 locks: length 213 ft., width 24½ ft., depth 7 ft. The last lock from junction with river Dongc is 26 ft. wide and usually open.

d Navigation

(1) River Dongc: to all river-boats not wider then 36 ft.

(2) Wilhelmina Canal: Below Oosterhout, 700 tons; length 230 ft., width 26 ft., draught 6½ ft. and 16½ ft. above water level. Above Oosterhout, boats of 500 tons. Not more than 4 barges can be towed together.

e Source of water

Zuid Willems Vaart.

f Port and Quay facilities

Oosterhout - Length 5/8 mile, width 33 ft., open to boats with draught of 4 ft. 1 in.

Tilburg - 984 ft. x 262 ft.

There are quays at Geertruidenberg, length 490 ft. and more along the canal.

3. Juliana Canal

Maastricht-Maasbracht. Length 21 miles.

a Description

Replaces the use of the Maas from Maastricht to Maasbracht. At Maastricht it joins the Zuid Willems Vaart and at Maasbracht it joins the Wessem-Nederweert Canal.

b Size

Width at bottom 52½ ft., depth 16½ ft.

c Bridges and locks

(1) 15 fixed bridges, minimum span 190 ft., minimum clearance 23 ft.

(2) 4 locks: at Limmel, Born, Roosteren, and Maasbracht. Each is 446 ft. long, 46 ft. wide, 12 ft. deep.

d Navigation

To barges of 2,000 tons and 328 ft. long, 39 ft. beam, 9 ft. draught.

e Source of Water

Upper Maas, and when Maas is low the pumps at the locks are used.

f Port and Quay facilities

Stein - Coaling port, handles 1-1/2 million tons of coal and coke a year, with a capacity for 4-1/2 million tons; quayage 984 yards, two-thirds of which is parallel to canal.

Born - Coaling port, capacity 2 million tons.

4. Wessem-Nederweert Canal

Length 10 miles.

a Description

Connects Maas at Wessem, 7½ miles above Roermond, with the Zuid Willems Vaart south of Nederweert.

b Size

Width at bottom 52 ft., depth 8 ft., in midstream 9 ft. deep.

c Bridges and locks

(1) 9 fixed bridges, clearance of 18 ft., width 52½ ft.

(2) 1 lock at Panheel, 1½ miles from the Maas, length 500 ft., width 25 ft.

d Source of Water

Zuid Willems Vaart

e Port and Quay facilities

Quays at Veltorhoef, Bij Berg, DeGriont.

f Navigation

To boats of 600 tons with maximum dimensions: length 197 ft., width 23 ft., draught 6¼ ft., above water-level 16½ ft. No more than 4 barges can be towed by one tug.

5. Zuid Willems Vaart and Canalized Dieze

Maastricht-River Maas. Length, 80 miles, of which 33 miles are in Belgium.

a Description

Leaves the Maas at Maastricht and goes to 's-Hertogenbosch. From 's-Hertogenbosch it is continued to the Maas at Engelen by canalized river Dieze and the Nieuwe Dieze. At Nederweert it is joined by Wessem-Nederweert Canal and the Noordervaart. At 51 miles from Maastricht it is joined by the Eindhoven Canal, and at 56 miles, by the Wilhelmina Canal.

b Size

Width: river Diezo, 130 ft, the stretch north of Beek, 70 ft. Depth: 6½ ft., at Maastricht 6½ ft., river Diezo 8 ft.

c Bridges and Locks

(1) 30 movable bridges in Dutch territory (25 lift, and 5 drawbridges) and 5 fixed with minimum clearance of 17 ft.

(2) There are 20 locks: 18 in Netherlands and 2 in Belgium. There is also 1 lock on the canalized Diezo and 1 on the Nieuwe Diezo. Size: Zuid Willems Vaart: 170½ ft. long, 23 ft. wide, 6½ ft. deep. Diezo: 295 ft. long, 42½ ft. wide, 9 ft. deep.

d Navigation

To boats of 450 tons, draught of 7 ft. Only 4 barges can be towed in line by 1 tug.

e Source of Water

The Maas at Maastricht.

f Port and Quay facilities

Ports at - Maastricht: Old Basin - length 656 ft., width 164 ft.
New Basin 656 ft. x 164 ft. x 7 ft. One-quarter of a mile distant, on the right, another port 656 ft. x 197 ft. x 9 ft. 10 in.
Weerd: 367 ft. x 164 ft. (bottom) x 6 ft. 10 in.
Veghel: 3,281 ft. x 75 ft. x 6 ft. 10 in.
's-Hertogenbosch: 1,476 ft. x 26 - 96 ft. x 7-1/2-8-1/2 ft. with loading and discharging quays accessible. Also one on right bank 361 ft. x 42-1/2 - 65-1/2 x 6 ft. 10.; and one on left bank 689 ft. x 131 ft. x 7-1/2 ft. Also several miles from 's-Hertogenbosch 2 basins: North is 2,625 ft. x 141 - 74 ft. x 10 ft. 10 in. and the South Basin is 3,411 ft. x 174 ft. x 10 ft. 10 in.

Quays at - Stone: Length 361 ft.
Helmond: Length 1,312 ft.
Engelen: Loading stage.

Occasional quays at varying distances.

6. River Maas

Geertruidenberg-Maasbracht. Length 133 miles.

a Description

(1) Connects Hollandschdiep with Juliana Canal at Maasbracht; Maas permits larger vessels than the shorter route via Zuid Willemsvaart and Wilhelmina Canal.

(2) 2 miles from Maasbracht the Lossem-Nederweert goes off to the west and joins the Zuid Willemsvaart.

(3) ½ mile below Mook, the Maas Waal Canal joins the Maas to the Waal.

(4) At St. Andries, Maas and Waal connected by St. Andries Canal 11 miles long, 82 ft. wide at the bottom, 16-19 ft. deep. Locks on both ends. Navigable for boats up to 2,000 tons, 10 ft. draught.

(5) Between Geertruidenberg and Engelen the Maas is called the Bergsche Maas.

b Size

(1) Bergsche Maas: length 16 miles, width 500-1,000 ft. A continuous channel, width 230-330 ft., and a depth of 8 ft. 10 in.

(2) Nieuwe Diepe-Grave: length 39 miles, depth 6½ ft.

(3) Mook-Lossem: width 330 ft. at Roermond, 394 ft. at Venlo, 656 ft. at Mook.

c Bridges and Locks

(1) Bergsche Maas: 2 fixed bridges. The road bridge across the Bergsche Maas at Poreboom destroyed in 1940 but far advanced in reconstruction in March, 1941. No locks.

(2) Mouth of Nieuwe Diepe-Maasbracht: 6 railway bridges, 3 other bridges. 2 bridges over locks - at Linne and Grave. Clearance of fixed bridges 23 ft.
Any damage done in May, 1940 had been temporarily fixed for limited service by May, 1941.

(3) 5 locks: At Grave, Sambeek, Belfeld, Roermond and Linne. The lock at Grave is 360 ft. x 46 ft. x 7 3/4 ft. All others 853 ft. x 46 ft. x 12½ ft.

d Navigation

(1) Below mouth of the Nieuwe Diepe: to barges up to 2,000 tons.

(2) Between Nieuwe Diepe and Grave: to boats of 1,000 tons.

(3) From Grave to Maasbracht: to boats of 1,500 tons.

e Source of Water

Dependent on natural drainage to the river, hence, subject to summer drought and winter floods.

f Port and Quay facilities

Lage-Zwaluwe	- Length 1,200 yds., open to boats of 150 tons with a draught of 6-1/2 ft.
Hooge-Zwaluwe	- Open to boats of 100 tons.
Drimmelen	- Length about 330 yds., width at bottom 50 ft., depth 4 ft. below mean water-level. Quays: open to boats of 250 tons.
Dussen	- 260 ft. x 33 ft. (bottom) x 3 ft.4 in. below mean water-level. Quay 200 ft. long.
Hagoort	- 295 ft. x 33 ft. (bottom) x 3 ft. 9 in. below mean water-level. Quay 197 ft. long.
Drongelen:	- 295 ft. x 33 ft. (bottom) x 7-1/2 ft. below mean water-level. Quay 197 ft. long.
Doeveren	- 330 ft. x 26-60 ft. (bottom) x 3 ft.4 in. below mean water-level. Quay 200 ft. long. Not available in flood water.
Genderen	- 360 yds. x 33-92 ft. (bottom) x 5 ft. below mean water-level. Not available in flood water.
Heusden	- Depth 8 ft. below mean water-level. Quays 230 ft. long. Tramway to the harbor.
Hedel	- Open to boats drawing 8-1/2 ft.
Maren	- Minor harbor and landing place.
Megen	- 330 ft. length, depth 1-1/2 ft. below mean water-level.

About 54 miles from Geertruidenberg a quay for the largest boats on the Maas.
About 68 miles from Geertruidenberg a quay with electric crane and a tramway connection with Nijmegen.

Venlo	- Open to largest Maas River boats. 886 ft. x 125 ft. (entrance) 190 ft. inside x 23 ft.. Electric cranes.
Roermond	- Quay has length of 656 ft. and the water is 10 ft. deep alongside.
Roermond	-Port- Open for boats 200 ft. long, it is 8 ft. deep.

All along the river facilities for loading and unloading.

7. River Waal

Dordrecht-Nijmegen. Length 56½ miles.

a Description

(1) Most important inland channel since it gives direct access to Rhine River and Ruhr area. Between Dordrecht and Hardinxveld the River is called the Merwede.

(2) At Hardinxveld the Nieuwe Merwede branches southward to the Hollandschdiep, at Gorinchem the Merwede Canal branches northward to Utrecht.

b Size

Width: Waal, normally 853 ft. (St. Andries-Gorinchem 1,150 ft.). Merwede (Gorinchem-Dordrecht), between 1,150 and 1,476 ft., widening near Dordrecht. Depth: varies according to the seasonal levels of the Rhine.

c Bridges and Locks

(1) 5 fixed (3 railway): Dordrecht-road bridge, Sliedrecht--railroad, Zaltbommel-road and railroad, Nijmegen-railroad. Minimum width: 340 ft.

(2) No locks.

d Navigation

(1) Maximum of barges: 419 ft. x 47 ft., of 4,300 tons.

(2) Maximum of steamers: 272 ft. x 32 3/4 ft., of 1,300 tons.

e Source of Water

Upper course of Rhine in Germany.

f Port and Quay facilities

	Dordrecht	- 4 large harbors
	Papendrecht	- Landing platforms
	Sliedrecht	- Access to canal, 980 ft. x 164 ft. x 11-1/2 ft. at mean low water-level.
	At entrance to Holkanaal	- A small port and landing platform
(North) and (South) indicate the bank on which it is located.	Giessendam (North)	- Landing platform & Shipyard.
	Werkendam (South)	- Port with 2 landing platforms.

Hardinxveld (North)	-	2 shipyards.
Steenwijk (South)	-	A port between dikes: area 7-1/2 acres and 262 ft. of quays. Opening to canal is 720 ft. long and 65-1/2 ft. wide at bottom.
Gorinchem (North)	-	Port of 19-3/4 acres area with shipyard and quays.
Brakel (South)	-	Landing platforms, 656 ft. of quay.
Zuilichem (South)	-	Loading space.
Herwijnen (North)	-	Port, 656 ft. x 72 ft. x 6-1/2 ft. at mean water-level.
Nieuwaal (South)	-	Loading space for steamboats.
Gameren (South)	-	Port 820 ft. x 164 ft. x 7 ft. at low water; 262 ft. of quays.
Haaften (North)	-	328 ft. of quays.
Tuil (North)	-	Port of 3-1/2 acres area, 7-10 ft. deep at low water. 426 ft. of quays.
Zaltbommel (North)	-	Port: area 5 acres, 426 ft. quays, depth 5 ft. at low water. Loading platform for steamboats, shipyards.
Opijnen (North)	-	492 ft. of quays.
Hurwenen (South)	-	393 ft. of quays.
Rossum (South)	-	492 ft. of quays.
Varik (North)	-	656 ft. of quays.
Drommel (South)	-	Quays with depth of 8-1/2 ft. alongside at mean low water.
Zennewijnen (North)	-	114 ft. of quays.
Tiel	-	Rhine port, 1,640 ft. quays. Also a commercial port of 1,729 acres, 2,460 ft. of quays, shipyard.
Leeuwen (South)	-	360 ft. of quay- 2 shipyards.
Druten (South)	-	328 ft. of quays, shipyard.
Deest (South bank)	-	557 ft. of quays, 2 shipyards.
Winsen	-	Loading space.
Herveld	-	328 ft. of quays.
Slijk-Ewijk	-	328 ft. quays , 12-1/4 ft. deep at mean water level, 8-3/4 ft. at mean low water-level.
Obsterhout	-	Loading space.
Nijmegen	-	Port- 11 miles from Nijmegen: Length 3,609 ft., depth 18-1/4 ft. Also a shipyard. Also a Rhine port; length of quays 2,624 ft.,

3 shipyards, electric cranes. Also a commercial port on east with rail connection, 1,245 ft. of quays, mechanical cranes and warehouses; 13-1/2 ft. deep at mean water.

Many loading and unloading spaces for brick yards.

8. Dordtsche Kil-Oude Maas

Length 21 miles.

a Description

The Dordtsche Kil connects Dordrecht with the Hollandschdiep. The Oude Maas is an eastward extension joining the New Waterway to Rotterdam east of Rotterdam. Important as an alternate route from Dordrecht to the Sea.

b Size

(1) Dortsche Kil 4 miles long, 492-820 ft. wide.

(2) Oude Maas 167 miles long, 328-1,312 ft. wide, and 21.6 ft. deep (least depth 27.8 ft. at high water).

c Bridges and Locks

On Oude Maas, 2 rising bridges each with height of 157.4 ft. above high water, and width of 196.8 ft. No locks.

9. Maas Waal Canal.

Length 8¼ miles.

a Description

Connects Maas and Waal Rivers at Wourt. Used for coal transport principally.

b Size

Width at bottom 133 ft.; depth mid stream 13 ft., near banks 11 ft. Minimum radius of curves is 2,187 yds.

c Bridges and Locks

(1) 4 concrete road bridges, a steel railroad bridge and 2 drawbridges over locks. Span 218½ ft.

(2) Locks at each entrance to canal: at Mook 885 ft. x 52½ ft. x 12½ ft., at Wourt 853 ft. x 52½ ft. x 14 3/4 ft.

Each lock will take 2 barges of 2,000 tons and a tug at same time.

d Navigation

Accomodates largest Rhine barges.

e Source of Water

Water level maintained at level of the canalized Maas.

f Ports and Quays

Hatert	- Loading space 200 yds. long.
Noerbosch	- Loading space 100 yds. long.

10. New Waterway and Scheur

Hook of Holland-Rotterdam. Length 20½ miles.

a Description

(1) This is Rotterdam's approach to the sea. At Rotterdam bridges cross the river preventing ocean-going ships from going further upstream.

b Size

Average width: 1,525 ft. increasing to 2,296 ft. at Hook of Holland. Depth: minimum at Rotterdam 26¼ ft., near Vlaardingen 29½ ft., at Hook of Holland 34 1/3 ft. In the dredged channel between Hook of Holland and Rotterdam the depth is maintained at 41 ft. The main channel is 328 ft. wide at full depth, and 656 ft. wide at depth of 31 ft.

c Bridges and Locks

No locks or bridges below Rotterdam. At Rotterdam there are 2 fixed bridges over the Nieuwe Maas and 2 lift-bridges over the Koningshaven.

d Navigation

To boats up to 40,000 tons, drawing 40 ft.

e Source of Water

Lek and Noord Rivers both fed by the Waal.

f Ports and Quays

See the detailed report on Port and Quay facilities for the

ocean ports of the Rotterdam area in Appendix XXII

11. River Lek and Neder Rijn

Rotterdam-Arnhem. Length 78 3/4 miles.

a Description

This waterway connects Rotterdam with the Rhine at Pannerden. Between Rotterdam and Ijsselmonde the river is called the Nieuwe Maas, between Ijsselmonde and Krimpen as the Noord, from Krimpen to Wijk bij Duurstede as the Lek, and from Wijk bij Duurstede to Arnhem as the Neder Rijn. It is crossed at Vreeswijk and Vianen by the Merwede Canal, linking the Lek and the Maal and going north to Amsterdam.

b Size

Width: Rotterdam-junction of Noord, more than 738 ft.; junction of Noord-Vreeswijk, 738 ft.; Vreeswijk-Eck en Wiel, 53 ft.; Eck en Wiel-Kasteel Doorwerth, 426 ft.; Kasteel Doorwerth-Arnhem, 328 ft. Depth: Rotterdam-Krimpen, unknown; Krimpen-Vreeswijk, 8½ ft.; Vreeswijk-Kasteel Doorwerth, 9 ft.; Kasteel Doorwerth-Arnhem, 10½ ft.

c Bridges and Locks

5 fixed bridges and one pontoon bridge. There are no locks.

d Navigation

Boats up to 2,000 tons.

e Source of Water

The Rhine, Ijssel and several smaller streams.

f Port and Quay facilities

Rotterdam	- See Appendix XXII.
Kralingschevoer	- Quays.
Bolnes	- Port, 2 shipyards.
Slikkerveer (South)	- Port and Quays, 6 shipyards.
Krimpen (North)	- Quays and loading spaces.
Lekkerkerk (North)	- Loading space, and several shipyards.
Opperduit (North)	- Modern landing space, 328 ft. of quays.

Streefkerk (South)	- Small port.
Bergstoep (North)	- Small port.
Ammerstol (North)	- Former has 3 loading spaces and a shipyard, latter has 164 ft. quays and 4 loading spaces. and 1 shipyard.
Groot Ammers (South)	
Schoonhoven (North)	- 2 small ports.
Langerak (South)	- 2 loading spaces.
Ameide (South)	- 492 ft. of quays, 2 landing spaces.
Jaarsveld (North)	- 115 ft. of quays, 3 landing spaces.
Leksmond (South)	- 131 ft. of quays.
Vianen (South)	- Ports, quays, and landing spaces.
Vreeswijk (North)	- Ports, quays, and landing spaces.
Waal	- Quays 393 ft.
Everdingen	- Landing spaces.
Culemborg (South)	- Commercial port, 688 ft. quays, landing space and shipyard.
Beusichem (South)	- 328 ft. of quays, landing space.
Ravenswaai (South)	- Small quay.
Wijk bij Duurstede (North)	- Commercial port, 918 ft. quays, landing space, shipyards.
Nederwijkermaat (North)	- Landing space.
Maurik (South)	- 410 ft. of quays.
Amerongen (North)	- Landing space, 98 ft. quays on north. 278 ft. on south.
Elst	- Landing space and quays on both banks.
Rhenen (North)	- Landing space, 229 ft. quays.
Opheusden (South)	- 164 ft. quays, landing space.
Wageningen (North)	- Landing space.
Randwijk	- Landing space and quays.
Renkum (South)	- Landing space, small dock, 328 ft. quays, shipyards.
Heteren (South)	- 197 ft. quays, landing space.
Driel (South)	- Landing space both sides, 328 ft. quays on south.
Arnhem	- Landing space.
Arnhem (North)	- Commercial port, 3,280 ft. quays, 5 landing spaces, 1 shipyard.
Arnhem (South)	- 2 Docks.

12. River Schie and River Vliet.

Rotterdam-Leiden. Length 23½ miles.

a Description

Canalized Schie connected with Nieuwe Maas at Rotterdam and Schiedam by 3 branches, uniting at Overschie. These are:

Schiedamsche Schie, 3½ miles long.

Delfshavensche Schie, 2½ miles long.

Rotterdamsche Schie, 4 3/4 miles long.

From Overschie to Delft, 5½ miles, the waterway is called the Delftsche Schie. From Delft to Leiden it is called the Rijn-Schie Canal. It joins the Oude Rijn at Leiden. The branch leading to The Hague is called the Haagsche Trek.

b Size

(1) Schiedamsche Schie: width (minimum) 50 ft., depth 7 ft.

(2) The Delfshavensche Schie: width 65-130 ft., depth 7½ ft.

(3) The Rotterdamsche Schie: width 26-100 ft., depth 6¼-7 3/4 ft.

(4) Connection with the Delfhavensche Schie: width 66 ft. bottom, depth 11½ ft.

(5) Delftsche Schie to Delft: width 40 ft. bottom, depth 9 ft.

(6) Delft to Leiden: bottom width 40-65 ft., depth 8 3/4 ft.

(7) Haagsche Trek: length 1 mile; width, bottom, 50 ft., depth 9 ft.

c Bridges and Locks

(1) Schiedamsche Schie: 8 movable bridges, 2 locks, minimum width 20 ft.

(2) Delftshavensche Schie: 1 railroad bridge, width 27 ft., clearance 13 ft.

(3) Rotterdamsche Schie: 2 fixed railroad bridges, 8 fixed--road, 5 movable--road, minimum width 15 ft., clearance 7 ft., 2 locks.

(4) Overschie-Delft. No bridge, no lock.

(5) Delft-Leiden: drawbridges, minimum width 24½ ft., clearance 5 ft. Swing bridges, width 27½ ft. One fixed railroad bridge, width 24½ ft., clearance 8½ ft. One lock at Leidschendam 253 ft. x 23 ft.

d Navigation

(1) Schiedamsche Schie: to barges of 250 tons.

(2) Delftshavensche Schie: barges 25 ft. wide, drawing 7¼ ft.

(3) Delftshavensche Schie-Nieuwe Maas: to barges 180 ft. x 23½ ft., drawing 7¼ ft. via Aelbrecht-sluis; and to barges 518 ft. x 19 ft. x 8 ft. via Parksluizen.

(4) Rotterdamsche Schie: to barges 14 3/4 ft. wide, drawing 5¼ ft.

(5) Delftsche Schie: to boats of 600 tons.

(6) Delft-Leiden: to boats of 600 tons.

e Port & Quay facilities:

Delft - Port, 490 ft. x 157 ft. x 9 ft.

Groentehaven - Port, 490 ft. x 115 ft. x 8 ft.

Damzicht - Port, 370 ft. of quays.

13. Rivers Ijssel, Gouwe, Aar, Drecht, Amstel

Rotterdam-Amsterdam. Length 51 miles.

a Description

Joins Nieuwe Maas at Krimpen-on-Ijssel, the waterway to Amsterdam follows the Hollandsche Ijssel up to Gouda. At Gouda the Gouwe River joins the Hollandsche Ijssel, the latter continuing, canalized, eastward and joined by the small canal, the Doorslag to the Merwede Canal. The waterway to Amsterdam follows the Gouwe upwards, through the Mallegat lock at Gouda. The water-way from Gouda to Amsterdam is divided into:

a. The Gouwe, to the crossing of the Oude Rijn. To

avoid the inconvenient Mallegat lock at Gouda a new by-pass connects the Hollandsche Ijssel and Gouwe.

b. The Aar Canal, from the Oude Rijn to the Tolhuissluis.

c. The Amstel-Drecht Canal, to the Amstelsluizen in Amsterdam.

d. From the Amstelsluizen, via the river Amstel and the Nieuwe Heerengracht, to the IJ, at Oosterdoksluiz. At the southern outskirts of Amsterdam the Weespor Trekvaart leaves the Amstel-Drecht Canal connecting it with the Merwede Canal.

b. Size

(1) Hollandsche Ijssel to Gouda: width at the bottom. 20-26 ft., depth 4½-7 3/4 ft.

(2) River Gouwe, from Mallegat Lock to Oude Rijn: width at the bottom, 50 ft. and over, depth 10 ft.

(3) New Canal by-passing Mallegat lock: width at bottom 112 ft.

(4) Aar Canal: width at bottom 15-82 ft., depth 9 ft.

(5) Connection with Oude Wetering via River Drecht: width at the water level. 130 ft., bottom much less, depth 5 ft.

(6) The Amstel-Drecht Canal to Amstelsluizen: width 15-82 ft. at the bottom, depth 8½ ft.

(7) From the Amstelsluizen to the IJ: width, bottom, 15-92 ft., depth 9½ ft.

c. Bridges and Locks

(1) No locks or bridges up to Gouda.

(2) Mallegat lock at Gouda: 153 ft. x 25 3/4 ft. x 7 3/4 ft.

(3) River Gouwe, from Mallegat Lock to crossing of the Oude Rijn: 5 mobile bridges, minimum width 25 ft.

(4) New Canal around above-named lock: Juliana lock 360 ft. x 39½ ft. x 13 ft.

(5) Gouwesluis, usually open, 142 3/4 ft. x 34 ft. x 10 ft.

(6) Aar Canal to Nieuwe Amstel or Tolhuissluis: 4 movable bridges, minimum width 25 ft. No locks.

(7) The Amstel-Drecht Canal to the Amstelsluizen: 7 movable bridges, minimum width 25 ft.

(8) Tolhuissluis, at entrance from river Drecht: double lock. Large one is 171 ft. x 26 3/4 ft. x 7 ft. 10 in. Small one is 79 ft. x 13 ft. x 6 ft. 4 in.

(9) From the Amstelsluizen: 6 movable bridges, minimum width 29 ft.

d. Navigation

(1) Lower part of Hollandsche Ijssel: to boats of 500 tons, or 180 ft. x 23 ft., drawing 6½ ft., but exceptionally there are boats of 1,500 tons. The canal around Mallegat accommodates a boat of 2,000 tons.

(2) River Gouwe: minimum accommodation of boats 213 ft. x 24½ ft., drawing 6 ft. 10 in.

(3) Aar Canal: minimum accommodation of boats 213 ft. by 24½ ft., drawing 6 ft. 10 in.

(4) Amstel-Drecht Canal: 230 ft. x 24½ ft., drawing 6 ft. 10 in.

(5) Mallegat lock: boats of 148 ft. x 24½ ft., drawing 6 ft. 10 in.

(6) Gouwesluis lock: boats of 141 ft. x 24½ ft., drawing 6 ft. 10 in.

(7) Tolhuissluis: boats of 184 x 24½ ft., drawing 6 ft. 10 in.

e. Port and Quay facilities: Several small ports, quays and loading places along this waterway.

14. Merwede Canal

Gorinchem-Amsterdam. Length 44 miles.

a. Description

Of great importance since it forms, pending the completion of the Amsterdam-Rhine Canal, the main connection between Amsterdam and the international rivers. Divided into 2 sections by the river Lek. The southern section is called Zoderick Canal. In Amsterdam the canal is connected with the IJ and the inner canals of the town.

b. Size

Width at the bottom 65 ft., depth, 10 ft. Sharpest bends have a radius of 380 yds.

c. Bridges and Locks

(1) South of river Lek: 1 swing railroad bridge, 8 other swing bridges, all with 2 openings 46 ft. wide. 3 locks 394 ft. x 39½ ft. x 9¼ ft.

(2) North of Lek: 3 fixed railroad bridges spanning the whole width of canal, clearance 22 ft. 4 in. There is 1 fixed foot-bridge of the same clearance. There are 9 double swing bridges, width 46 ft., and 3 fixed road bridges, clearance 29½ ft. 3 locks, 394 ft. x 78 3/4 ft. minimum.

d. Navigation

Open to barges up to 2,000 tons or 328 ft. x 37 3/4 ft., drawing 9 ft. of water.

e. Source of Water

Adjacent rivers.

f. Port and Quay facilities

Gorinchem harbor has emergency facilities.

15. Amsterdam-Rhine Canal

a. Description

Begun in 1937. It is not yet completed. Runs between Amsterdam and the Boven Rijn. North of the Lek the canal is reported almost completed (1942). South of the Lek the canal is probably still far from complete.

b. Size

Width at bottom. 118-164 ft., depth 11½ ft.-13 ft.

c. Bridges and Locks

(1) Bridges: no information.

(2) Locks: There are 4 locks. The locks are completed whereas the remainder of the canal is not. All have a passage 59 ft. wide.

d. Navigation

The canal will take the largest Rhine boats.

16. Oude Rijn

Katwijk-Woerden. Length 28½ miles.

a. Description

Links Katwijk-Aan-Zee with Leiden, 6 3/4 miles, width 50-260 ft. From Leiden to Bodegraven, 14 miles. Width at the bottom 30-213 ft., depth 9 ft. Bodegraven to Woerden, 7 3/4 miles. Width at the bottom 20-100 ft., depth 6½-8 ft. This section available only for smaller barges than in use in other sections.

b. Bridges and Locks

(1) Katwijk-Aan-Zee to Leiden: 7 movable bridges, minimum width 23½ ft. No locks.

(2) Leiden-Bodegraven: 5 movable bridges. The bridge at Zwammerdam has a width of only 19 ft. No locks.

(3) Bodegraven-Woerden: 4 movable bridges, minimum width 18½ ft., 1 fixed bridge, 2 openings, each 14 3/4 ft. wide. 1 lock at Bodegraven, 126 ft. x 18¼ ft. x 8½ ft.

c. Navigation

As far as bridge at Zwammerdam for barges of 700 tons or 230 ft. long, drawing 7½ ft. Between Zwammerdam and Woerden, for barges of 300 tons, or 123 ft. long, drawing 6 ft.

d. Sources of Water

Natural drainage.

e. Port and Quay facilities

Leiden.....Port, 26-66 ft. wide, 5 ft. 10 in. deep.

Alphen.....Port, 437 yards x 33 ft. x 3¼ ft.

Woerden (near).....Port, 328 ft. x 82 ft. - 164 ft. entrance.

17. Leiden-Ringvaart

Length 7 miles.

a. Description

Connects Oude Rijn at Leiden with the Ringvaart at Leeghwater. The southern part is formed by river Zijl, northern by a shallow lake with several channels.

b. Size

River Zijl: width 130-195 ft., depth 3 3/4 ft. The Kaager Plassen (shallow-lake): between 6½-10 ft. deep.

c. Bridges and Locks

1 swing bridge over the Zijl, width 33 ft., clearance 13 ft.

d. Navigation

Open to barges of 600 tons.

e. Source of Water

Natural drainage.

f. Port and Quay facilities

At Eijmers Poel on Kaag - a private yacht port.

18. Ringvaart

Length 37 miles.

a. Description

This enclosed the large Haarlemmermeer polder. It is divided into

(1) From Leeghwater to Cruquius, 9½ miles, carries traffic between Leiden, Haarlem and Noord Zee Canal.

(2) From Cruquius to Nieuwe Meer, 12¼ miles, mainly local traffic.

(3) From Nieuwe Meer to Oudewetering, 11 miles. This is most important section, being main water route between Amsterdam and Leiden. Through traffic predominates.

(4) From Oudewetering to Leeghwater, 4 miles. Also part of main Amsterdam-Leiden waterway.

b. Size

Width at the bottom 92 ft., least depth 7 3/4 ft.

c. Bridges and Locks

1 fixed bridge, clearance 18 3/4 ft. 15 movable bridges (3 railroad), minimum width 25 3/4 ft. No locks.

d. Navigation

Open to unlimited length, width 23 ft. Section Leeghwater-Cruquius, open to boats of 500 tons. Between Cruquius and Nieuwe Meer, to boats of 500 tons. Maximum draught: 6 ft. 9 in. for flat bottoms and 7 3/4 ft. for sharp keels.

e. Source of Water

Drainage from Harlemmermeer polder.

f. Port and Quay facilities

There are quays at frequent intervals.

19. Ringvaart-Amsterdam

Length 5½ miles.

a. Description

Connects Ringvaart with Amsterdam. Begins as Nieuwe Meer for ½ mile. It then becomes the Schinkel for 1½ miles. Then it becomes in succession the Kostverloren Vaart, 1 3/4 miles, the Kattensloot, 400 yds., the Nassau-Kade, 400 yds., Singel-Gracht, 300 yds., Westerkanaal, 600 yds., Oudehaven, 500 yds., and then the Ij.

b. Size

(1) Nieuwe Meer Channel: width at bottom 130 ft., depth 10 ft.

(2) Kostverloren Vaart: width 82-98 ft., depth 10 3/4 ft.

(3) Kattensloot: 115-130 ft. x 10 3/4 ft.

(4) Singel Gracht: 115 ft. x 10 3/4 ft.

(5) Westerkanaal: 148-197 ft. x 13 ft.

c. Bridges and Locks

6 bridges. 2 locks, 1 normally open and the other is 404 ft. x 25 ft. 3 in. x 9 ft. 5 in.

d. Navigation

Open to barges of 500 tons. Maximum length 164 ft., width 24½ ft., draught 6 ft. 10 in.

e. Ports and Quays

In Amsterdam.

Westelijk - a main canal of 875 yds. x 131 ft. x 11½ ft.; 6 basins, 360 ft. x 82 ft., lead off to the marktcentrale to the east.

Oostelijk - a main canal of 550 yds. x 100 ft. x 10 ft.; 6 basins of 360 ft. x 82 ft., lead off to the Marktcentrale to the west.

Oude Houthaven - width 32½ ft., depth 13 ft.

20. River Spaarne

Ringvaart-Noord Zee Canal. Length 8 3/4 miles.

a. Description - 3 sections

(1) Zuider Spaarne from Cruquius to Haarlem, 3 miles.

(2) Binnen Spaarne at Haarlem, 9¼ miles.

(3) Noorder Spaarne to the 2 locks at Spaarndam, 2½ miles. After these locks it forks into 2 canals which lead to the Noord Zee Canal.

(a) Western Canal 2½ miles long, little used.

(b) Eastern Canal 2¼ miles long.

b. Size

(1) Zuider and Binnen Spaarne: width 98-328 ft., depth 7¼ ft.

(2) Noorder Spaarne: width 820 ft., depth 11 ft. 2 in.

(3) Western Canal: bottom width 72 ft., depth 11½ ft.

(4) Eastern Canal: bottom width 82 ft., depth 11½ ft.

c. Bridges and Locks

(1) 5 movable bridges over the Spaarne. Each at least 26¼ ft. wide and 2 more over the locks. A fixed bridge over the entrance to the Western Canal from the Noord Zee Canal is 23 ft. wide with a clearance of 10 ft. Bridge over entrance to the Eastern Canal from Noord Zee Canal: 2 spans each 46 ft. wide, with 14 3/4 ft. clearance.

(2) 2 locks. Large one 328 ft. x 39 ft. x 14½ ft. Small one 332 ft. x 20½ ft. x 6½ ft.

d. Navigation

Spaarne open to boats up to 600 tons, Noorder Spaarne up to 2,500 tons. Western Canal only open to boats clearing 9½ ft. above water. Draught of boats in Eastern Canal is 10 ft.

e. Ports and Quays

4 loading and unloading berths on Zijkanaal, eastern branch.

21. Noord Zee Canal

Ijmuiden-Amsterdam. Length 19¼ miles.

a. Description

No less than 10 canals branch off this canal. The west end of the canal is the Noord Zee Haven at Ijmuiden.

b. Size

Noord Zee Canal proper, minimum width at bottom 164 ft., depth 32 ft.

c. Bridges and Locks

(1) 2 swing railroad bridges, minimum width 180 ft. and mimimum clearance when closed 19½ ft.

(2) There are locks at North Sea end and the Ijssel Meer end. 4 locks at Ijmuiden:

(a) Kleine Sluis: 226 ft. x 39¼ ft. x 17½ ft.

(b) Zuider Sluis: 390 ft. x 59 ft. x 26 ft.

(c) Midden Sluis: 738 ft. x 82 ft. x 33 ft.

(d) Noorder Sluis 437 yds. x 164 ft. x 49 ft.

Noorder Sluis-reported obstructed but repaired by Germans.

Midden Sluis-damaged so that it can only be operated by hand.

d. Navigation

Open to ocean-going vessels up to 20,000 tons up to Amsterdam.

e. Port and Quay facilities

Noord Zee Haven - The channel is maintained at 40 ft. depth, the haven is enclosed by 2 stone piers projecting into the sea. Northern pier is 1,475 yds. long and other is 1,670 yds. long.

On south side of Buitentooleidingskanaal of the South Sluis is a landing bridge called the Toeristensteiger and at the entrance of the South Sluis is an anchoring space for barges.

On south bank of Binnentooleidingskanaal of the South Sluizen, near the Small Sluis, is a loading and unloading quay, 656

ft. long. North of west entrance of Buitentocleidingskanaal of North Sluis is the opening of Hoogovenhaven, 875 yds. x 328 ft. x 29½ ft. West of the r.r. bridge at Velzen, 2 small ports on north. Eastern one, for the electricity works and blast furnaces, is 1,476 ft. x 164-246 ft. x 23 ft. The western one serving the blast furnace and cement factory is 1,094 ft. x 246 ft. x 14 3/4 ft.

22. Noord Hollandsch Canal

Den Helder-Amsterdam. Length 49 miles.

a. Size

Width, bottom at least 30 ft., depth about 16½ ft.

b. Bridges and Locks

(1) 14 movable road bridges and 3 mobile rail bridges, width 48½-55 ft.

(2) 2 locks at Purmerend. One is 210 ft. x 50 ft. and the other is 70 ft. x 18 ft. At 8½ miles from Den Helder is a lock 380½ ft. x 50½ ft. x 21 ft.

c. Navigation

Up to 830 tons. Maximum length of boats 210 ft. and maximum width 49 ft., drawing 15 3/4 ft.

d. Source of Water

Natural drainage.

e. Ports and Quays

Den Helder - Outer harbor, Het-Nieuwediep, formed by east coastline and a dam running east of it. The dam is about 1¼ miles long. At north end is Fort Harsens. Het-Nieuwediep is open to ocean-going ships up to 10,000 tons. Least depth 33 ft. From Het-Nieuwediep, the Marinedok, the Marine Binnen Haven and Koopvaarders Binnenhaven are entered by locks--Zeedok lock, Marine lock, and Koopvaarders lock. From the south end of Koopvaarders Binnenhaven, the Spoorwegbassin runs westward. The North Holland Canal runs south from the Koopvaarders Binnenhaven.

23. Zuid Beveland Canal

Hansweert-Wemeldinge. Length 5½ miles.

a. Description

Gives access from the West Schelde through the Zuid Beveland Island to the East Schelde. Part of waterway between Antwerp and the Rhine. It probably has the greatest traffic of any European Canal, about 28 million tons a year.

b. Size

Width at the bottom 33 ft., depth 21 ft. On one and at times on both sides of the main channel, there is a secondary channel. Width at the bottom 82-131 ft., depth 18 ft.

c. Bridges and Locks

(1) 4 swing bridges.

(2) The Post Weg, a main highway, crosses the canal 1¼ miles south of Wemeldinge. At Vlake, 3 miles from Wemeldinge, a new rail and road bridge crosses the canal.

(3) Locks at Hansweert and Wemeldinge.

(a) At Wemeldinge - West lock 367½ ft. x 26½ ft. x 16 ft.

(b) " " - Middle lock 390½ ft. x 52½ ft. x 21¼ft.

(c) " " - East lock 498 3/4 ft. x 52½ft. x 21¼ft.

(d) Three locks at Hansweert are the same.

d. Navigation

Open to ships 330 ft. x 52 ft., drawing 20 ft.

e. Source of Water

West and East Scheldo.

f. Port and Quay Facilities

North of large lock is a quay 262 1/2 ft. long. 3/4 mile north of Hansweert, a new quay 33 ft. long with sufficient storage space. Another such quay 1 mile north of Hansweert. Post Weg bridge: a small quay. Voorhaven at Wemeldinge is 197-443 ft. wide.

24. Walcheren Canal

Flushing-Veere. Length 9¼ miles.

a. Size

Width at bottom 65½ ft., depth, minimum, 22 3/4 ft.

b. Bridges and Locks

(1) 2 drawbridges . width 63 ft.

(2) 2 double locks at Flushing and Veere - one large one, 459 ft. x 63 ft. x 16 ft., and one small one, 196 3/4 ft. x 24¼ ft. x 13 ft.

c. Navigation

Open to boats 426 ft. long, 59 ft. wide.

d. Source of Water

The Honte and the Zand Kreek.

e. Port and Quay facilities

Flushing - Outside the port is the basin Buitenhaven, about 1 mile long, 394-245 yds. wide, and 27 3/4 ft. deep at low tide. The quays are formed by stone dikes having landing bridges and coaling berths. Inner port or Binnenhaven has 2 basins of 490 yds. x 330-620 ft. x 24½ ft. and 1 fixed crane. The Binnenhaven connects with the canal to the north and the sea and Buitenhaven to the east by locks. There are 2 minor open basins in the West Schelde south of Flushing.

Middelburg - An outer basin, the Voorhaven, 984 ft. x 328 ft. x 14 3/4 - 18 ft.

Veere - The Buitenhaven outside of the northern locks of the canal, 328-230 ft. wide and 14 3/4 ft. deep.

25. Twenthe Canal

a. Description

Connects Ijssel River with German frontier. Length 30.4 miles. According to some of the latest available reports a northern branch to Almelo is not yet completed.

b. Size

Width, least, 121 ft., depth 10.1 ft.

c. Locks and Bridges

3 locks, each 459 x 39 x 10.1 ft.

d. Navigation

Accommodates a Rhine barge of 1,800 tons.

26. Waterway from Kampen to the Lower Rhine via the Ijssel River

a. Description

Maximum permissible draught in ordinary seasons is 7.6 ft. in the Ijssel. From Hattem, south of Zwolle, the Apeldoornsche Canal replaces the use of the winding Ijssel. At Dieren the Ijssel is again joined. The Ijssel and Neder Rijn form a juncture south of Arnhem. Willems Vaart connects Zwolle with the Ijssel River.

b. Size

(1) Willems Vaart is 1.2 miles in length, its width varies from 12-31 ft., and its depth is 10.9 ft.

(2) Apeldoornsche Canal is 33.2 miles long. Its width varies from 36-45 ft. and for most part it is 5.4 ft. deep.

c. Bridges and Locks

(1) in the Willems Vaart there are 2 locks.

(a) Small one is 298 ft. x 19 ft. x 7.5 ft.

(b) Large one is 308 ft. x 39 ft. x 10.2 ft.

There are also 6 bridges, none fixed, all have openings 36 ft. wide except the drawbridge at Katerveer, which is 19 ft.

(2) Apeldoornsche Canal has 6 locks, all of them are 104.9 ft. x 19.9 ft. x 6.9 ft. Also 49 bridges, none fixed, minimum width 19 ft.

d. Navigation

Only available to vessels of lightest draught.

APPENDIX XXV

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CIVIL AIRPORTS AND SEAPLANE STATIONS AS OF MAY 1940

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	Place	Facilities	Kind of Port	Size in Yards
1.	Schipol or Schiphof = 5½ miles S.W. of center of Amsterdam.	11 hangars. Airport buildings. Two longest runways 1,400 yards, gasoline oil, repairs, medical assistance, wireless radio landing beacon. Illuminated wind indicator. Home of Fokker and K.L.M. organizations.	Civil, customs and military airports in joint use with municipality of Amsterdam.	1,250 x 1,800
2.	Waalhaven = Immediately S. of Waalhaven harbor, 3½ miles S.S.W. of center of Rotterdam.	2 new hangars, airport buildings, gasoline, oil, repairs, medical assistance, wireless radio landing beacon. Illuminated wind indicator.	Civil and customs airports.	820 x 1,250
3.	Flushing = 2 miles N.E. of Flushing town.	1 hangar, two runways, 700 yards.	Civil and customs airports, controlled by Dept. of Public Works. Gasoline, oil, all repairs in Flushing. Illuminated wind indicator, wireless, radio landing beacon, airport buildings.	850 x 1,000
4.	Twenthe = 3½ miles north by west of Enschede.	Hangars, gasoline, oil, minor repairs, wireless, radio landing beacon, illuminated wind indicator, airport buildings.	Civil and customs airports.	730 x 800
5.	Schellingwoude = 3 miles east by north of center of Amsterdam, ½ mile S. of Schellingwoude.	Hangars, gasoline, oil, minor repairs, wind indicator.	Naval and civil seaplane station. Customs on request.	550 x 1,850 in front of hangars; 1,100 x 2,500 in Zuider Zee.

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	Place	Facilities	Kind of Port	Size in Yards
6.	Eindhoven = 3 miles west by north of Eindhoven.	Three hangars, three large runways of 1,500, 1,300 and 1,800 yards; gasoline, oil, minor repairs, illuminated wind indicator, wireless, radio landing beacon, and airport buildings.	Civil and customs airports.	1,300 x 1,300
7.	Eelde - 1 mile E.S.E. of Eelde, 6¼ miles S. of Groningen.	Two hangars at east end, gasoline, oil, minor repairs, wind indicator, wireless, radio landing beacon, airport buildings.	Civil and customs airports.	900 x 1,000
8.	Ypenburg - 2¼ miles due north of Delft, to east of the new Delft - Hague main road.	Four hangars, runway 850 yeards, gasoline, oil, illuminated wind indicator, minor repairs, airport buildings.	Civil and customs airports.	800 x 1,000

OPEN TO CIVIL AIRCRAFT IN THE NETHERLANDS BUT NOT TO INTERNATIONAL TRAFFIC

9.	Haamstede - on island of West Schouwen 1½ miles W.N.W. of Haamstede.	Two hangars (one small), gasoline, oil, wind indicator, wireless, radio landing beacon, airport buildings.		1,100 x 800
10.	Teuge - 4 3/4 miles W by south of Deventer, 4½ miles E.N.E. of Apeldoorn.	Two hangars, gasoline, oil, wind indicator, airport buildings.		750 x 850
11.	Leeuwarden - 2 miles N.W. of Leeuwarden - 2 miles N. of the Leeuwarden - Harlingen Railway	No hangars, three runways, 1,400, 1,580, and 1,780 yards, gasoline, oil, wind indicator.		1,400 x 1,600
12.	Texel - on Texel Is., 4¼ miles N.N.E. of Den Burg, 2 3/4 miles E.N.E. of De Koog.	Large hangar, gasoline, oil, small airport buildings.		760 x 820

EMERGENCY LANDING GROUNDS OPEN TO CIVIL TRAFFIC

	Place	Facilities	Kind of Port	Size in Yards
13.	Arnhem - 4 miles north of Arnhem Station, 12 miles south by west of Apeldoorn.	---	Military landing ground.	450 x 600
14.	Bussum - 1 mile southwest of Naarden-Bussum Railway Station, 2½ miles north-west of Hilversum.	---	Emergency landing ground.	550 x 430
15.	Gilze-Rijen - 1½ miles north by west of Gilze, on either side of Gilze Rijen road, 6 3/4 miles west-south-west of Breda.	Main new airport east of Gilze-Rijen road, has one large and four small hangars, three runways of 1,400, 1,500 yds. and one under construction (Feb. 1941)	Military landing ground.	west-- 750 x 1,000 east - 1,400 x 1,700
16.	Harskamp - 4/5 mile north-east of Harskamp.	---	Military landing ground.	N.E.- S.W.-800-900 N.-S.-600
17.	De Kooy - 2 3/4 miles south by east of Den Helder.	Three hangars, airport being extended to the south. When complete will give runway of 1,500 yards S.E.-N.W. (Reported Feb. 1941), gasoline, oil, all repairs, illuminated wind indicator.	Naval airport. also customs on request.	980 x 870. Being enlarged to 1,250 x 870.
18.	Milligen - 1¼ miles E.S.E. of Garderen, 9¼ miles west of Apeldoorn.	---	Small emergency military landing ground.	300 x 330
19.	Oldebroek - 4½ miles south of center of Oldebroek, 11 miles south-west of Zwolle.	Two hangars, wind indicator.	Military airport.	700 x 700

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Place	Facilities	Kind of Port	Size in Yards
20. Soesterberg - 3/4 mile north west of Soesterburg, 6 3/4 miles east northeast of Utrecht-Amersfoort Railway..	Eight hangars, two runways, 1,400 yards, gasoline, oil, all repairs, wireless, wind indicator.	Military airport.	1,400 x 1,600
21. Venlo - 1 mile east of Venlo.		Military landing ground.	400 x 440
22. De Mok at south-east corner of Texel Is. 1 3/4 miles south-south-east of Hoorn.	Three large hangars, gasoline, oil, repairs, wireless, wind indicator.	Seaplane base.	2,000 x 750 at high tide. 600 x 500 at low tide.
23. Veere - on north east shore of Walcheren Is., 4 miles northeast of Middleburg.	Three hangars, slipway, crane, gasoline, oil, repairs. Temporarily closed (1940).	Seaplane base. Temporarily closed (1940)	1,650 x 2,850

APPENDIX XXVI - COMMERCE STATISTICS

CONFIDENTIAL

TABLE I - COMMERCE ACCORDING TO PRINCIPAL INDUSTRIES

Groups	Year	IMPORTATION		EXPORTATION	
		Weight (tons)	Value (1,000 dollars)	Weight	Value
Mines and Peat bogs	1938	11,058,122	72,459	6,941,911	24,314
	1939	12,660,726	69,631	5,773,329	20,564
Agriculture, cattle fisheries, forest, hunt	1938	4,484,984	220,649	1,974,558	136,460
	1939	4,088,628	206,993	1,642,295	128,839
Foodstuffs	1938	757,787	32,411	1,450,363	123,880
	1939	852,335	33,433	1,346,705	112,823
Ceramics, cement, glass, plaster and brick	1938	1,861,306	13,833	174,944	3,926
	1939	1,897,565	15,497	106,288	3,886
Chemical	1938	3,558,254	72,818	3,941,081	55,898
	1939	3,269,456	81,047	3,845,031	55,576
Wood, cork and straw working	1938	1,419,478	37,243	63,054	2,898
	1939	1,585,969	45,960	38,580	2,567
Paper	1938	108.999	10,560	293,874	11,757
	1939	158,215	13,967	300,206	10,836
Textile	1938	97,077	45,960	88,741	41,242
	1939	116,001	59,835	83,235	38,027
Clothing	1938	6,178	15,094	791	1,692
	1939	6,575	15,649	882	2,198
Leather, oilcloth and rubber goods	1938	18,961	12,381	16,754	6,914
	1939	20,943	15,803	14,871	7,003
Metal, boats and carriages	1938	1,696,743	196,873	559,184	121,329
	1939	2,027,084	230,243	509,961	108,551

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APPENDIX XXVI - COMMERCE STATISTICS

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TABLE I - COMMERCE ACCORDING TO PRINCIPAL INDUSTRIES

Groups	Year	IMPORTATION		EXPORTATION	
		Weight (tons)	Value (1,000 dollars)	Weight	Value
Printing and engraving	1938	3,565	5,453	5,642	4,788
	1939	3,632	3,994	5,440	58,623
Other	1938	95,508	13,255	364,269	15,763
	1939	105,379	14,595	341,416	15,584
TOTAL	1938	25,109,460	749,829	15,905,674	550,752
	1939	26,792,518	802,752	14,008,299	512,089

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TABLE II - THE VALUE OF CHIEF IMPORTS AND EXPORTS (in dollars)

	IMPORTS Dollars		EXPORTS Dollars	
	1938	1939	1938	1939
Iron and Steel	61,790,050	75,863,670	18,051,800	16,863,540
Textiles	45,960,010	56,935,250	41,239,300	38,027,500
Cereals & Flour	61,811,250	42,981,410	3,805,930	1,064,770
Coal, Coke, briquettes	27,813,340	31,666,970	33,742,980	29,555,980
Rice	6,862,970	8,355,450	5,045,600	3,685,620
Copper & products	10,208,330	12,184,170	2,771,370	2,575,270
Butter	1,060	-------	23,204,990	24,503,490
Margarine	530	1,060	1,524,470	819,700
Sugar	4,265,440	5,077,930	2,574,210	2,035,730
Cheese	138,860	138,860	15,365,760	13,406,880
Wood	34,442,580	38,513,510	1,233,331	907,360
Skins	11,876,240	11,953,090	8,244,680	7,968,550
Coffee	8,281,250	7,810,080	1,452,730	1,231,190
Paper	10,561,310	13,967,620	11,758,050	10,841,150
Soot, grease, tallow, suet	1,578,870	1,516,860	1,161,176	838,990
Zinc	1,235,430	1,058,940	1,409,270	1,263,520
Tobacco	11,144,310	12,077,110	499,790	421,880
Tin	1,240,200	1,150,630	22,157,771	14,583,480
Colors	6,312,300	9,987,850	4,631,140	4,938,010
Seeds	19,902,560	18,806,520	5,683,190-	5,521,540
Fertilizer	18,401,070	17,767,720	12,665,940	9,857,470

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TABLE III - NETHERLANDS TRADE BY COUNTRIES IN 1939
As compared with 1938
(Values in thousands of dollars)

Country and year		% of Total	Jan.-Dec.
IMPORTS FROM			$
All countries	1939		808,982
	1938		778,264
1/ Germany	1939	23.58	202,060
	1938	21.76	185,122
United Kingdom	1939	7.77	62,869
	1938	8.14	63,341
Belgium	1939	14.50	117,302
	1938	11.46	89,233
France	1939	4.90	39,656
	1938	4.59	35,716
Switzerland	1939	1.85	14,950
	1938	1.47	11,433
Sweden	1939	2.88	23,290
	1938	2.12	16,467
Italy	1939	1.05	8,479
	1938	0.93	7,200
Netherlands Indies	1939	6.02	48,726
	1938	7.19	55,956
United States	1939	9.63	77,944
	1938	10.84	84,369

1/ Including former Czecho-Slovakia.

NETHERLANDS TRADE BY COUNTRIES IN 1939
As compared with 1938
(Values in thousands of dollars)
TABLE III-Continued

Country and Year		% of Total	Jan.-Dec.
EXPORTS TO			
All countries	1939		515,379
	1938		571,640
1/ Germany	1939	14.26	75,486
	1938	15.41	94,232
United Kingdom	1939	23.44	120,805
	1938	22.65	128,716
Belgium	1939	9.37	48,276
	1938	10.23	58,153
France	1939	5.23	26,968
	1938	5.83	33,119
Switzerland	1939	2.65	13,649
	1938	2.01	11,405
Sweden	1939	4.25	21,880
	1938	3.47	19,725
Italy	1939	1.22	6,265
	1938	1.20	6,820
Netherlands Indies	1939	10.42	53,714
	1938	9.66	54,896
United States	1939	4.38	22,580
	1938	3.60	20,430

1/ Including former Czecho-Slovakia.

TABLE IV - DUTCH TRANSIT TRADE INDICATING ORIGIN AND DESTINATION OF TRANSIT GOODS

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A. TRANSSHIPMENT

*No. as of 1939	Country of Origin	Tons	*No. as of 1939	Country of Destination	Tons
1.	Germany	13,143,554	1.	Germany	17,615,880
2.	Norway	3,712,638	2.	Italy	3,910,306
3.	Sweden	2,288,854	3.	Switzerland	725,526
4.	Spain	949,924	4.	Sweden	664,916
5.	British West Africa	749,360	5.	France	604,306
6.	Newfoundland	747,156	6.	Belgium	411,046
7.	Great Britain	746,054	7.	Argentina	326,580
8.	Poland	560,918	8.	Portugal	284,316
9.	United States	471,656	9.	Great Britain	270,790
10.	Algeria	448,514	10.	Greece	262,276
11.	Netherlands Indies	443,008	11.	Brazil	257,868
12.	French Morocco	427,576	12.	United States	196,156
13.	Spanish Morocco	409,944	13.	Jugoslavia	196,156
14.	Argentina	357,048	14.	Denmark	190,646
15.	Belgium and Luxembourg	326,192	15.	Norway	173,014
16.	France	300,846	16.	Egypt	145,464
17.	Brazil	284,316	17.	Algeria	132,312
	TOTAL	26,367,558			26,367,558

B. WITHOUT TRANSSHIPMENT

1.	Germany	6,447,802	1.	Germany	4,783,334
2.	Belgium and Luxembourg	2,456,358	2.	Belgium and Luxembourg	4,034,798
3.	France	609,406	3.	France	851,928
4.	Sweden	485,982	4.	Switzerland	451,820
5.	United States	196,156	5.	British India	127,832
6.	Norway	168,616	6.	Turkey	114,608
	TOTAL	10.364,320			10,364,320

*No. indicates order of importance in 1939.

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APPENDIX XXVII

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B R O A D C A S T I N G S T A T I O N S: N E T H E R L A N D S

STATION	LETTERS	FREQUENCY KC/S	WAVELENGTH (METERS)	LONGITUDE	LATITUDE	POWER IN ANTENNA (KW)	NAME AND ADDRESS OF THE ADMINISTRATION CARRYING OUT THE EMISSION
Bloemendaal, Noordholland		1220	245.9	4 37 05 E	52 23 10 N	.05	Gereformeerde Kerk.
Hilversum		995	301.5	5 12 25 E	52 14 05 N	15 & 60	Algemeene Vereeniging "Radio Omroep" (A.V.R.O.)[1] Vereeniging van Arbeiders Radio-Amateurs (V.A.R.A.)[1] Vrijzinnig Protestantsche Radio Omroep (V.P.R.O.)[1]
Huizen	(PCJ (PCJ2	9590 15220	31.28 19.71	5 14 48 E	52 17 32 N	60	
Huizen	PHI	(11730 (17775 (21480	25.58) 16.88) 13.97)	5 14 48 E	52 17 32 N	(20) (20) (12)	S. A. Philips Omroep Holland-Indie[3]
Jaarsveld		722	415.5	5 10 00 E	52 00 00 N	17	Katholieke Radio Omroep (K.R.O.)[2] Nederlandsche Christelijke Radio Vereeniging (N.C.R.V.)[2]
Kootwijk		160	1875	5 49 30 E	52 10 24 N	10 & 120	Katholieke Radio Omroep (K.R.O.)[2] Nederlandsche Christelijke Radio Vereeniging (N.C.R.V.)[2]
Kootwijk		253	1186	"	"		Adm. P.T.T.
Kootwijk		41000	7.317	"	"		" Under construction.
Kootwijk		45000	6.667	"	"		" "
Kootwijk		49000	6.122	"	"		" "
Kootwijk		53000	5.660	"	"		" "
Kootwijk	PFP	25610	11.71	"	"		" "
Kootwijk	PFQ	26300	11.41	"	"		" "
Kootwijk	PFR	7210	41.61	"	"		" "

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B R O A D C A S T I N G S T A T I O N S: N E T H E R L A N D S

STATION	LETTERS	FREQUENCY KC/S	WAVELENGTH (METERS)	LONGITUDE	LATITUDE	POWER IN (KW)	NAME AND ADDRESS OF THE ADMINISTRATION CARRYING OUT THE EMISSION
Kootwijk	PGD	(6020 (6025 (6030	49.83) 49.79) 49.75)	5 49 30 E	52 10 24 N		Adm. P.T.T.
Scheveningen	PCF	249	1205	4 15 30 E	52 05 40 N	2	Exploitation des Postes, des Telegraphes et des Telephones de l'Etat

1
These three societies change quarterly the wavelength and the station with societies named under 'Jaarsveld and Kootwijk'.

2
These two societies change quarterly the wavelength and the station with societies named under 'Hilversum'.

3
Emissions intended for the East and West Dutch Indies.

STATIONS APPROVED BY THE GERMAN PROPAGANDA MINISTRY WHICH MAY BE LISTENED TO IN GERMANY

	Long Wave	Medium Wave	Medium Wave
Pres. Official German name	Friesland	Hilversum I	Hilversum II
Other name of same	Hilversum I	Jaarsveld (Hilversum)	
Name in Eng.	Hilversum	Hilversum I	Hilversum II
Wave Length	1875	415.5	301.5
Kilocycles	160	722	995
Kilowatt	120	20	60

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APPENDIX XXVIII

THE NETHERLANDS

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FIXED RADIO STATIONS

STATION	CALL LETTERS	FREQUENCY KC/S	WAVELENGTH (METERS)	LONGITUDE	LATITUDE	TYPE OF EMISSION	POWER IN ANTENNA (KW)	NATURE OF SERVICE AND COUNTRIES WITH WHICH SERVICE IS ESTABLISHED		ADMINISTRATION OR COMPANY
Pilot and Customs Boat		1715	174.9							
Brandaris Beacon	PIB	1715	174.9	05 13 00 E	53 21 40 N	A3	0.03	FX	Interior	Serv. of Pilot & Beacon
Haaks Fire Boat	PCD	1715	174.9	04 19 00 E	52 57 56 N	A3	0.03	FX	Interior	"
Kijkduin Semaphore	PIA	1715	174.9	04 30 20 E	52 57 14 N	A3	0.03	FX	Interior	"
Scheveningen	PDN	1715	174.9	04 15 30 E	52 05 40 N	A3	1	FX	Interior	Adm. P.T.T.
Terschellingerbank Fire Boat	PCE	1715	174.9	04 47 30 E	53 27 00 N	A3	.03	FX	Interior	Serv. of Pilot & Beacon
The Hague	PDU	6745	44.48			A1, A2	1.5	FX CO	IndN, Suri, Cura	Govt.
The Hague	PCU	8840	33.94			A1'	1.25	FX CO	IndN, Suri, Cura	Govt. Tel & Telg with FM
The Hague	PEU	13675	21.94			A1'	1.25	FX CO	IndN, Suri, Cura	"
The Hague	PFU	15025	19.97			A1, A2	1.5	FX CO	IndN, Suri, Cura	Govt.
The Hague	PIU	18765	15.99			A1'	1.25	FX CO	IndN, Suri, Cura	Govt. Tel & Telg with FM
The Hague	PHU	22400	13.39			A1, A2	1.5	FX CO	IndN, Suri, Cura	Govt.
Hook of Holland	PIE	1695	177.0	04 06 44 E	51 58 55 N	A3	.03	FX	Interior	Serv. of Pilot & Beacon
Kootwijk	PCG	16.8	17800	05 49 30 E	52 10 24 N	A1	170	FX CP	USA, IndN	Adm. P.T.T.
Kootwijk	PEW	64.7	4637	"	"	A1	20	FX CP	Europe	"
Kootwijk	PER	84.5	3550	"	"	A1	10	FX CP	Europe	"
Kootwijk	PEM	100.8	2975	"	"	A1	10	FX CP	Europe	"
Kootwijk	PGE	4590	65.36	"	"	A1, A2	25	FX CP	USA	"
Kootwijk	PGE	4595	65.29	"	"	A1, A2	25	FX CP	USA	"
Kootwijk	PGE	4600	65.22	"	"	A1, A2	25	FX CP	USA	"
Kootwijk	PDW	5920	50.68	"	"	A2	10	FX		"
Kootwijk	PGG	6770	44.31	"	"	A1	25	FX CP	Jap.	"
Kootwijk	PGG	6775	44.28	"	"	A1	25	FX CP	Jap.	"
Kootwijk	PGG	6780	44.25	"	"	A1	25	FX CP	Jap.	"
Kootwijk	PGK	6830	43.92	"	"	A1	25	FX CP	Jap.	"
Kootwijk	PGK	6835	43.89	"	"	A1	25	FX CP	Jap.	"
Kootwijk	PGK	6840	43.86	"	"	A1	25	FX CP	Jap.	"
Kootwijk	PDT	7350	40.82	"	"	A1	30	FX CP	IndN, USA, Europe	"

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STATION	CALL LETTERS	FREQUENCY KC/S	WAVELENGTH (METERS)	LONGITUDE	LATITUDE	TYPE OF EMISSION	POWER IN ANTENNA (KW)	NATURE OF SERVICE AND COUNTRIES WITH WHICH SERVICE IS ESTABLISHED	ADMINISTRATION OR COMPANY
Kootwijk	PDL	7725	38.83	05 49 30 E	52 10 24 N	A1, A2	2	FX CP IndN	Adm. P.T.T.
Kootwijk	PDL	7730	38.81	"	"	A1, A2	2	FX CP IndN	"
Kootwijk	PDL	7735	38.78	"	"	A1, A2	20	FX CP So. Am, IndN	"
Kootwijk	PDM	7760	38.66	"	"	A1, A3,A4	40	FX CP No. Am.	"
Kootwijk	PDM	7765	38.63	"	"	A1, A3,A4	40	FX CP NO. Am.	"
Kootwijk	PDM	7770	38.61	"	"	A1, A3,A4	40	FX CP No. Am.	"
Kootwijk	PGA	7830	38.31	"	"	A1, A3,A4	30	FX CP IndN	"
Kootwijk	PGA	7835	38.29	"	"	A1, A3,A4	30	FX CP IndN	"
Kootwijk	PGA	7840	38.27	"	"	A1, A3,A4	30	FX CP IndN	"
Kootwijk	PGB	8155	36.79	"	"	A2, A3	15	FX CP IndN	"
Kootwijk	PDO	8175	36.70	"	"	A2	6	FX CP IndN	"
Kootwijk	PDO	8180	36.67	"	"	A2	6	FX CP IndN	"
Kootwijk	PDX	9195	32.63	"	"	A1	20	FX CP Jap.	"
Kootwijk	PDX	9200	32.61	"	"	A1	20	FX CP Jap.	"
Kootwijk	PDX	9205	32.59	"	"	A1	20	FX CP Jap.	"
Kootwijk	PDP	9235	32.49	"	"	A1, A2	20	FX CP So. Am. IndN	"
Kootwijk	PDP	9240	32.47	"	"	A1, A2	20	FX CP So. Am. IndN	"
Kootwijk	PGC	9370	32.02	"	"	A1, A3	40	FX CP IndN	"
Kootwijk	PGC	9375	32	"	"	A1, A3	40	FX CP IndN	"
Kootwijk	PGC	9385	31.97	"	"	A1, A3	40	FX CP IndN	"
Kootwijk	PDK	10410	28.82	"	"	A1, A3,A4	80	FX CP IndN	"
Kootwijk	PDK	10415	28.80	"	"	A1, A3,A4	80	FX CP IndN	"
Kootwijk	PDK	10420	28.79	"	"	A1, A3,A4	80	FX CP IndN	"
Kootwijk	PDR	10695	28.05	"	"	A1, A2	25	FX CP USA, IndN	"
Kootwijk	PDR	10700	28.04	"	"	A1, A2	25	FX CP USA, IndN	"
Kootwijk	PDR	10705	28.02	"	"	A1, A2	25	FX CP USA, IndN	"
Kootwijk	PDS	10730	27.96	"	"	A1	25	FX CP So.Am,IndN,Europe	"
Kootwijk	PDS	10735	27.94	"	"	A1	25	FX CP So.Am,IndN,Europe	"
Kootwijk	PDQ	10990	27.30	"	"	A1	25	FX CP USA, IndN	"
Kootwijk	PDQ	10995	27.29	"	"	A1	25	FX CP USA, IndN	"
Kootwijk	PGF	11157.5	26.89	"	"	A1, A2	2	FX CP IndN	"
Kootwijk	PGF	11162.5	26.88	"	"	A1, A2	2	FX CP IndN	"
Kootwijk	PGF	11167.5	26.86	"	"	A1, A2	2	FX CP IndN	"

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STATION	CALL LETTERS	FREQUENCY KC/S	WAVELENGTH (METERS)	LONGITUDE	LATITUDE	TYPE OF EMISSION	POWER IN ANTENNA (KW)	NATURE OF SERVICE AND COUNTRIES WITH WHICH SERVICE IS ESTABLISHED	ADMINISTRATION OR COMPANY
Kootwijk	PDV	12050	24.90	05 49 30 E	52 10 24 N	A1, A2, A3	80	FX CP IndN	Adm. P.T.T.
Kootwijk	PDV	12055	24.89	"	"	A1, A2, A3	80	FX CP IndN	"
Kootwijk	PDV	12060	24.88	"	"	A1, A2, A3	80	FX CP IndN	"
Kootwijk	PFG	13540	22.16	"	"	A1	25	FX CP Jap.	"
Kootwijk	PFG	13545	22.15	"	"	A1	25	FX CP Jap.	"
Kootwijk	PFG	13550	22.14	"	"	A1	25	FX CP Jap.	"
Kootwijk	PFK	13660	21.96	"	"	A1, A3, A4	40	FX CP N.Am.	"
Kootwijk	PFK	13665	21.95	"	"	A1, A3, A4	40	FX CP N.Am.	"
Kootwijk	PFK	13670	21.95	"	"	A1, A3, A4	40	FX CP N.Am.	"
Kootwijk	PCT	14500	20.69	"	"	A1	25	FX CP USA, IndN	"
Kootwijk	PCR	14565	20.60	"	"	A1	20	FX CP USA.	"
Kootwijk	PCO	15000	20	"	"	A1	5	FX CP IndN	"
Kootwijk	PCL	16[illegible]	18.40	"	"	A2	15	FX CP IndN	"
Kootwijk	PFD	16350	18.35	"	"	A1	25	FX CP IndN, USA.	"
Kootwijk	PFD	16355	18.34	"	"	A1	25	FX CP IndN, USA.	"
Kootwijk	PCY	17800	16.85	"	"	A1	25	FX CP IndN	"
Kootwijk	PCY	17805	16.85	"	"	A1	25	FX CP IndN	"
Kootwijk	PCY	17810	16.84	"	"	A1	25	FX CP IndN	"
Kootwijk	PFA	17840	16.82	"	"	A1	5	FX	"
Kootwijk	PCV	18065	16.60	"	"	A1, A3, A4	80	FX CP IndN	"
Kootwijk	PCV	18070	16.60	"	"	A1, A3, A4	80	FX CP IndN	"
Kootwijk	PCV	18075	16.59	"	"	A1, A3, A4	80	FX CP IndN	"
Kootwijk	PCV	18085	16.59	"	"	A1, A3, A4	80	FX CP IndN	"
Kootwijk	PCQ	18210	16.47	"	"	A1, A2	20	FX CP USA.	"
Kootwijk	PCQ	18215	16.47	"	"	A1, A2	20	FX CP USA.	"
Kootwijk	PCQ	18220	16.47	"	"	A1, A2	20	FX CP USA.	"
Kootwijk	PCQ	18225	16.46	"	"	A1, A2	20	FX CP USA.	"
Kootwijk	PCK	18400	16.30	"	"	A1, A3, A4	80	FX CP IndN	"
Kootwijk	PCK	18405	16.30	"	"	A1, A3, A4	80	FX CP IndN	"
Kootwijk	PCK	18410	16.30	"	"	A1, A3, A4	80	FX CP IndN	"
Kootwijk	PCK	18415	16.29	"	"	A1, A3, A4	80	FX CP IndN	"

STATION	CALL LETTERS	FREQUENCY KC/S	WAVELENGTH (METERS)	LONGITUDE	LATITUDE	TYPE OF EMISSION	POWER IN ANTENNA (KW)	NATURE OF SERVICE AND COUNTRIES WITH WHICH SERVICE IS ESTABLISHED	ADMINISTRATION OR COMPANY
Kootwijk	PFC	18460	16.25	05 49 30 E	52 10 24 N	A2	5	FX	Adm. P.T.T.
Kootwijk	PFE	18470	16.24	"	"	A1, A2	20	FX CP S.Am, IndN	"
Kootwijk	PFE	18475	16.24	"	"	A1, A2	20	FX CP S.Am, IndN	"
Kootwijk	PFE	18480	16.23	"	"	A1, A2	20	FX CP S.Am, IndN	"
Kootwijk	PCM	18535	16.19	"	"	A1, A3	40	FX CP USA, IndN	"
Kootwijk	PCM	18540	16.18	"	"	A1, A3	40	FX CP USA, IndN	"
Kootwijk	PCM	18545	16.18	"	"	A1, A3	40	FX CP USA, IndN	"
Kootwijk	PCX	18705	16.04	"	"	A1, A2	2	FX CP IndN	"
Kootwijk	PCX	18710	16.03	"	"	A1, A2	2	FX CP IndN	"
Kootwijk	PCX	18715	16.03	"	"	A1, A2	2	FX CP IndN	"
Kootwijk	PCP	18735	16.01	"	"	A1	20	FX CP IndN. USA	"
Kootwijk	PCP	18740	16.01	"	"	A1	20	FX CP IndN. USA	"
Kootwijk	PCP	18745	16	"	"	A1	20	FX CP IndN. USA	"
Kootwijk	PCS	19125	15.69	"	"	A1	20	FX CP S.Am, IndN	"
Kootwijk	*PFS	14840	20.22	"	"	A1, A2, A3	40	FX CP	"
Kootwijk	PFS	14845	20.21	"	"	A1, A2, A3	40	FX CP	"
Kootwijk	PFS	14850	20.20	"	"	A1, A2, A3	40	FX CP	"
Kootwijk	PFM	19710	15.22	"	"	A1, A3, A4	40	FX CP S.Am, N.Am.	"
Kootwijk	PFN	20005	15.00	"	"	A1, A2	20	FX CP S.Am, IndN	"
Kootwijk	PFN	20010	14.99	"	"	A1, A2	20	FX CP S.Am, IndN	"
Kootwijk	PFN	20015	14.99	"	"	A1, A2	20	FX CP S.Am, IndN	"
Kootwijk	PCZ	20225	14.83	"	"	A2	5	FX	"
Kootwijk	PCW	20475	14.65	"	"	A1, A2	20	FX CP S.Am.	"
Kootwijk	PCW	20480	14.65	"	"	A1, A2	20	FX CP S.Am.	"
Kootwijk	PCW	20485	14.64	"	"	A1, A2	20	FX CP S.Am.	"
Kootwijk	PFF	20825	14.41	"	"	A1, A3, A4	60	FX CP IndN	"
Kootwijk	PFF	20830	14.40	"	"	A1, A3, A4	60	FX CP IndN	"
Kootwijk	PFF	20835	14.40	"	"	A1, A3, A4	60	FX CP IndN	"

*This station apparently was omitted from "Nomenclature des Stations Fixes" through an oversight but is included in "Liste des Frequences".

CONFIDENTIAL

STATION	CALL LETTERS	FREQUENCY KC/S	WAVELENGTH (METERS)	LONGITUDE	LATITUDE	TYPE OF EMISSION	POWER IN ANTENNA (KW)	NATURE OF SERVICE AND COUNTRIES WITH WHICH SERVICE IS ESTABLISHED	ADMINISTRATION OR COMPANY
Maas Fire Boat	PCB	1695	177.0	03 53 24 E	52 01 50 N	A3	.03	FX Interior	Serv. of Pilot & Beacon
Noord Hinder Fire Boat	PCC	1695	177.0	02 33 50 E	51 38 27 N	A3	.03	FX Interior	"
Scheveningen	PCH	135	2222	04 15 30 E	52 05 40 N	A1	8	FX CP	Adm. P.T.T.
Scheveningen	PCF	249	1205	"	"	A3	2	FX CV	"
Scheveningen Depot Central de Phares	PIC	1705	176.0	04 16 05 E	52 06 20 N	A3	.03	FX Interior	Serv. of Pilot & Beacon
Vlissingen Roeierswacht	PID	1695	177.0	03 34 22 E	51 26 28 N	A3	.03	FX Interior	"
Vossegat Utrecht	PBE	386	777	05 08 00 E	52 05 00 N	A1	..	FX CO	

FC – Land Station effecting service with ship stations
FX – Effecting service between fixed points
CO – Open for official service exclusively
CP – Open for public service
CV – Open for service for a private company exclusively
CR – Open for restricted public service

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APPENDIX XXIX

Netherlands

T E LEG R A P H S T A T I S T I C S 1 9 3 9

I	Population		8,829,408
II	Area square miles		13,427
III	Telegraph Network		
1°	A)	No. Telegraph circuits in service (except submarine)	
	A1)	Harmonic Telegraph (each frequency for the two directions counted as one circuit)	9
	A2)	Multiple, simplex and duplex (No. of circuits is equal to half of the sectors)	12
	A3)	Simple, simplex and duplex (each communication is counted as a circuit)	461
	B)	Length in miles of submarine telegraph circuits (route length)	770
2°		No. Radio Teleg. links between fixed points	22
3°		No. Photo-telegraphic circuits	
	A)	Wire	No special circuits
	B)	Radio	1
IV	Offices and stations		
1°		No. offices, including branch offices	
	A)	Telegraph Administration	2,238
	B)	Of R. R. Cos.	51
	C)	Of private Cos.	2
	D)	Semaphoric with telegraph service	10
		Total	2,301
2°		No. fixed radio teleg. stations	1
	A)	Transmitters	1
	B)	Receivers	1
3°		No. offices participating in photo-telegraphic transmission	1
V	Apparatus		
1°		Systems used for telegraphic transmission over principal lines, national and international	

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V (Con'd)

	A)	Morse	
	B)	Wheatstone, Creed	
	C)	Hughes	
	D)	Baudot	
	E)	Siemens (rapid printers)	Not in use
	F)	Murray	"
	G)	Arythmique	
2°		Quantity of arythmique apparatus in service	152
3°		No. of arrangements employed in telegraphy	
	A)	Simultaneous physical phantom or superphantom circuits	816
	B)	Infra-acoustic or impulsion	
	C)	Harmonic (channels)	18
	D)	Super-acoustic	
	E)	Carrier current (channels)	

APPENDIX XXX

Telephone Statistics 1940

Number in parentheses is 1939 figure

I	Population	8,829,408	
II	Area square miles	13,427	
III	Number of central exchanges in service		
	1. automatic central exchanges	538	(439)
	2. semi-automatic central exchanges	--	--
	3. manual exchanges	935	(1,074)
	TOTAL	1,473	(1,513)
IV	Number of subscriber lines in service		
	1. connected to automatic central exchanges	264,731	
	2. connected to semi-automatic central exchanges	--	
	3. connected to manual central exchanges	61,151	
	TOTAL	325,882	
V	Number of instruments in service		
	1. number of private telephones	454,216	(457,796)
	2. number of public telephones	3,489	(3,628)
	TOTAL	457,705	(461,424)
VI	Interurban and international circuits in service		
	1. total number of interurban circuits	3,376	(3,767)
	2. total number of international circuits	250	(250)
	3. total length of open wire circuits (miles)		
	a. real circuits	12,340	(12,566)
	b. phantom circuits	621	(793)
	4. total length of circuits (miles) of aerial and underground cables		
	a. real circuits of 2 wires	161,677	(107,535)
	b. real circuits of 4 wires	82,490	(84,942)
	c. phantom circuits (2 or 4 wires)	11,040	(11,058)
	5. total length of circuits (miles) in submarine cables		
	a. real circuits of 2 wires		(484)
	b. real circuits of 4 wires		--
	c. phantom circuits (2 or 4 wires)		(188)
	d. circuits using carrier current		(233)
VII	Use		
	1. number of interurban conversations	66,830,302	(66,209,570)
	2. number of international conversations	563,581	(2,312,831)

APPENDIX XXXI

Netherlands

SUBMARINE CABLE NETWORKS

Interior Network	Number Conductors
Oostmahorn (Groningen)--Schiermonnikoog Island	4
Holwerd--Ameland Island	4
Holwerd--Ameland Island	8
Terchelling Island--Ameland Island	4
Vlieland Island--Terchelling Island	4
Texel Island--Vlieland Island	8
den Helder--Texel Island	12
den Helder--Texel Island	5
den Helder--Texel Island	48
Jan Hagelhoek (Monnikendam)--Marken Island	1
Ijsselmond (Kampen)--Schokland Island	4
Ijsselmond (Kampen)--Schokland Island	2
Schokland Island--Urk Island	4
Voorne Island--Overflakkee Island	48
Overflakkee Island--Hoeksche Waard Island	14
Overflakkee Island--Hoeksche Waard Island	4
Overflakkee Island--Schouwen Island	10
Schouwen Island--Tholen Island	21
Noord-Beveland Island--Schouwen Island	10
Noord-Beveland Island--Zuid-Beveland Island	21
Noord-Beveland Island--Zuid-Beveland Island	7
Zuid-Beveland Island--Walsoorden	34
Zuid-Beveland Island--Terneuzen	21
Zuid-Beveland Island--Terneuzen	48

International Network	
Domburg--Aldeburgh (British Dutch)	4
Domburg--Aldeburgh (British Dutch)	16
Domburg--Aldeburgh (British Dutch)	17
Zandvoort--Lowestoft (British Dutch)	4
Zandvoort--Benacre (British Dutch)	4
Zandvoort--Benacre (British Dutch)	4